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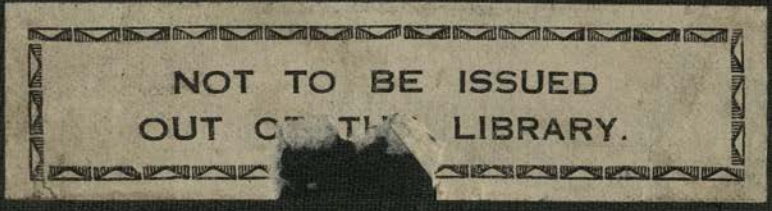
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N LLOYDIA.
Lloydia serotina.

Tulipa sylvestris.

ILLARY OR SNAKE'S HEAD.
Fritillaria meleagris.

4. COMMON MEADOW SAFFRON.
Colchicum autumnale.

5. MOUNTAIN SCOTTISH ASPHODEL.
Tofieldia palustris.

6. JOINTED FIREWORT.
Eriocaulon septangulare.

Pl. 23

Vol. III.

TE FLOWERING PLANTS

GRASSES, SEDGES & FERNS

OF

GREAT BRITAIN

AND THEIR ALLIES

THE CLUB MOSSES, HORSETAILS, &c

By ANNE PRATT

NEW EDITION
REVISED BY EDWARD STEP, F.L.S.

55287

ILLUSTRATED WITH
THREE HUNDRED AND NINETEEN COLOURED PLATES
FIGURING
UPWARDS OF 1500 SPECIES

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

VOL. III.

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THE FLOWERING PLAN
GRASSES, SEDGES & FERNS
OF
GREAT BRITAIN

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VOL. III.

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THE FLOWERING PLANTS

OF

GREAT BRITAIN

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ae.

Order LXI. SCROPHULARINEÆ—FIGWORT TRIBE.

CALYX 4—5-lobed, not falling off; corolla generally irregular, often 2-lipped, overlapping when in bud; stamens usually 4, 2 long and 2 short, sometimes 2 or 5; ovary 2-celled; style 1; stigma 2-lobed; capsule 2-celled, 2—4-valved, or opening by pores; seeds few or numerous. This is a large and important order, consisting chiefly of herbaceous, but, in some cases, of shrubby plants, inhabiting all parts of the world. Many powerful medicinal plants are contained in it, as the Foxglove and the Hedge-hyssop (*Gratiola officinalis*); while it contributes many beautiful flowers to our gardens, and makes our waysides gay with its Mulleins, Speedwells, and other lovely wild flowers.

* *Stamens* 2.

1. SPEEDWELL (*Verónica*).—Corolla wheel-shaped, unequally 4-cleft, lower segment the narrowest; capsule 2-celled. Named from Veronica, a saint of the Roman Catholic Church.

* * *Stamens* 4, *usually* 2 *long and* 2 *short.*

2. BARTSIA (*Bártsia*).—Calyx tubular, generally coloured, 4-cleft; corolla gaping, with a contracted throat, upper lip arched, entire, lower lip 3-lobed; lobes bent back; capsule flattened, pointed, 2-celled; seeds numerous, angular. Name in honour of John Bartsch, a Prussian botanist.

3. EYE-BRIGHT (*Euphrásia*).—Calyx tubular, 4-cleft; corolla gaping, upper lip divided, lower lip in 3 nearly equal lobes; anthers spurred at the base; capsule flattened, blunt, or notched; seeds ribbed. Name from the Greek, *euphraino*, to gladden, in allusion to its supposed useful properties.

4. YELLOW-RATTLE (*Rhinánthus*). — Calyx inflated, 4-toothed; corolla gaping, upper lip flattened vertically, lower lip plane, 3-lobed; capsule flattened, blunt; seeds numerous, flat and bordered. Name in Greek signifying Nose-flower, from the peculiar form of the corolla.

5. COW-WHEAT (*Melampýrum*).—Calyx tubular, with four narrow teeth; corolla gaping, upper lip flattened vertically, turned back at the margin, lower lip 3-cleft; capsule oblong, obliquely pointed, flattened; seeds one

to four in each cell. Name in Greek signifying black wheat, the form of the seed resembling a grain of wheat, and the powdered seed being said, when mingled with flour, to render it black.

6. LOUSE-WORT (*Pediculáris*).—Calyx inflated, its segments jagged, somewhat leafy; corolla gaping, upper lip arched, flattened vertically, lower lip plane, 3-lobed; capsule flattened, oblique, 2-celled; seeds angular. Name alluding to a disease which it is supposed to produce in sheep that feed upon it.

7. FIGWORT (*Scrophulária*).—Calyx 5-lobed; corolla nearly globose, with two short lips, the upper 2-lobed, with a small scale within, the lower 3-lobed; capsule opening with two valves, the edges of which are turned in. Name from the disease which the plant was supposed to cure.

8. FOXGLOVE (*Digitális*).—Calyx in 5 deep, unequal segments; corolla irregularly bell-shaped, with 4—5 shallow lobes; capsule egg-shaped. Name from the Latin *digitale*, the finger of a glove, which its flowers resemble.

9. SNAPDRAGON (*Antirrhínum*). — Calyx 5-parted; corolla personate, swollen, but not spurred at the base, its mouth closed by a palate; capsule 2-celled, oblique, opening by pores at the top. Name in Greek signifying opposite the nose, from the mask-like appearance of the flowers.

10. TOAD-FLAX (*Linária*).—Calyx 5-parted; corolla personate, spurred at the base; mouth closed by a palate; capsule swollen, 2-celled, opening by valves or teeth. Name from *linum*, flax, which the leaves of some species resemble.

11. MONKEY-FLOWER (*Mimulus*). — Calyx 5-toothed, angular. Corolla ringent, 2-lipped, the upper lip erect, 2-lobed; lower spreading, 3-lobed. Stamens four. Stigma of two equal plates. Capsule 2-valved, with many seeds. Name from the Greek, *mimo*, an ape, from the shape of the corolla mouth.

12. MUDWORT (*Limosélla*).—Calyx 5-cleft; corolla bell-shaped, 5-cleft, equal; capsule globose, 2-valved. Name from the Latin *limus*, mud, from the soil in which it grows.

13. MONEY-WORT (*Sibthórpia*). — Calyx in 5 deep-spreading segments; corolla wheel-shaped, 5-cleft, nearly regular; capsule nearly round, flattened at the top. Name in honour of Dr. Sibthorp, formerly Professor of Botany at Oxford.

* * * *Stamens* 5.

14. MULLEIN (*Verbáscum*).—Calyx 5-parted; corolla wheel-shaped, 5-cleft, irregular; stamens hairy. Name from the Latin *barba*, a beard, from the shaggy leaves of some species.

1. SPEEDWELL (*Veronica*).

* *Racemes terminal, tube of corolla longer than broad.*

1. **Spiked Speedwell** (*V. spicáta*).—Flowers in a dense long-spiked raceme; bracts longer than the sepals; leaves egg-shaped or lanceolate, with roundish serratures, but entire towards the end, lower ones broader, blunt and stalked; capsules egg-shaped, downy, with a very long style; stem erect, branching at the base; perennial. In one form of this plant, the lower leaves are oblong and wedge-shaped at the base; while another form has its

1. SPIKED SPEEDWELL.
Veronica spicata.
2. THYME LEAVED S.
V. serpyllifolia.
3. ALPINE S.
V. alpina.
4. BLUE ROCK S.
V. saxatilis.
5. FLESH COLOURED S.
V. fruticulosa.
6. MARSH S.
V. scutellata.
7. WATER S.
V. anagallis.
8. BROOKLIME.
V. beccabunga.

leaves at the base either rounded or heart-shaped. This is a very rare Speedwell of chalky pastures. It has been found about Newmarket and Bury, as well as on some limestone cliffs in other parts of the kingdom. It is a common garden flower, and its bright blue blossoms are very ornamental there, during July and August. It is a much finer plant in the garden than when in its wild state; its dense spikes becoming, under culture, sometimes twelve inches long. Gardeners call it Cat's-tail Speedwell. It varies occasionally with white blossoms.

Some writers consider the word *Veronica* to be a corruption of *Betonica;* others have referred it to a Celtic word, corresponding to the modern Gaelic *firineachd*, faithfulness, the plant having been an emblem of that virtue. It is, however, with far more reason, believed to have originated in the legend of the Roman Catholic Church, respecting the Saint Veronica, who was the same as Berenice. The word is from the Greek *hiera eikon*, sacred picture; the blossoms having been fancied to bear a representation of the countenance of our Saviour. A handkerchief, superstitiously believed to have formerly belonged to this St. Veronica, was long preserved with great veneration at St. Peter's, in Rome, and is said to have been used by our Lord on His way to the crucifixion, and to have the impress of the sacred lineaments. A French writer tells us that a number of these "Véroniques, or Holy-faces," which were imitations of the original, were prized by many persons.

* * *Racemes terminal; tube of the corolla very short.*

2. **Thyme-leaved Speedwell** (*V. serpyllifólia*).—Leaves egg-shaped, or oval, slightly crenate; lower leaves smaller and rounder; raceme long and many-flowered; capsule inversely kidney-shaped, as long as the style; stem rooting below, afterwards erect, in one variety of the species prostrate, and with shorter racemes of flowers; perennial. This is a small and not unfrequent plant on waste lands, by road-sides, or in pastures. It bears several many-flowered spike-like clusters of light blue blossoms, veined with a darker tint. It is a very pretty plant, the variety (*humifusa*) with prostrate stems being especially so. This last grows on the Highland mountains, and has much larger and more beautiful flowers than the ordinary form.

3. **Alpine Speedwell** (*V. alpina*).—Leaves elliptical or egg-shaped, toothed or entire; lower leaves smaller; raceme few-flowered, hairy, with spreading, not glandular hairs; capsule inversely egg-shaped, notched, crowned with the very short style. This beautiful but rare species is found only on the Highland mountains. Its stems are about four inches high, it has large leaves, and its dense raceme of bright blue flowers expands in July and August.

4. **Blue Rock Speedwell** (*V. saxátilis*).—Leaves elliptical, somewhat serrated, lower leaves smaller; raceme few-flowered, downy, the hairs not glandular; stem spreading; capsule egg-shaped, its valves 2-cleft; perennial. This, too, is a mountain flower, growing, though rarely, on high rocky places in Scotland. Several of the Speedwells flourish at great elevations on most bleak and exposed spots. Nor is the Arctic region without some of this lovely tribe to enliven the landscape. Sir J. D. Hooker, in his "Flora Antarctica," referring to "Lord Auckland's Isles," tells us that among

several bushy plants and ferns growing there, a shrubby Veronica was intermingled; and he remarks that higher up the sides of the mountains a beautiful alpine flora makes its appearance, unrivalled in beauty by those of any Antarctic country. Such are the species of gentian and a Veronica, with flowers of intensest blue, several magnificent compound flowers, a ranunculus, and a liliaceous plant, whose dense spikes of gold are often so abundant as to attract the eye at a considerable distance. This latter plant, the *Chrysobactron rossii*, often renders large spots of so golden a hue as to be seen at a distance of some miles from the shore. Sir Joseph Hooker remarks of these regions, that the vegetation is abundant, but the species of plants few in number.

5. **Flesh-coloured Speedwell** (*V. fruticulósa*). — Raceme many-flowered, downy, with glandular hairs; leaves leathery, elliptic-lanceolate, somewhat serrated; stem ascending, woody, branched at the base; capsule egg-shaped, with 2-cleft valves; perennial. The flesh-coloured flowers of this species expand in July. The plant was found many years ago on Ben Cruachan by Dr. Walker, and on Ben Lawers by Dr. R. Brown, but has not been seen by any other botanists.

* * * *Racemes axillary.*

6. **Marsh Speedwell** (*V. scutelláta*).—Racemes alternate; fruit-stalks reflexed; leaves sessile, linear, somewhat toothed; capsule of two flattened roundish lobes; stem erect; perennial. This species is found on the sides of ditches, and on other boggy places, having a long weak stem, and pale flesh-coloured or white blossoms, with darker bluish lines on the petals; the clusters of flowers are nearly opposite each other, and appear in July and August. The stem sends out creeping scions from its base.

7. **Water Speedwell** (*V. anagállis*). — Leaves lanceolate, serrated, acute, sessile; racemes opposite; fruit-stalks spreading; capsule slightly notched; stem erect; perennial, the stem sending out scions. This is a pretty flower, frequent in England, in ditches, or on their borders; and having, in July and August, pale lilac or white flowers. The whole plant is usually smooth, but sometimes the long many-flowered racemes are slightly hairy. The stem is thick, hollow, and succulent, about a foot high. The plant is less frequent in Scotland than in England.

8. **Brooklime** (*V. beccabúnga*).—Leaves stalked, elliptical, obtuse, with rounded notches at the margin; racemes opposite; fruit-stalks spreading; capsule swollen, roundish, slightly notched; stem prostrate at the base, rooting; perennial. The Brooklime is a very frequent plant, having, in its ordinary form, bright blue flowers, with bracts shorter than the stalks, but found occasionally, as at Dalkeith, with longer bracts and pink or flesh-coloured blossoms. It is a pretty succulent plant, with dark but bright green thick leaves, and a stout juicy stem about a foot high. Its brilliant little corollas may be seen glistening among the reeds by the watercourse from May to September. It is very pungent, and well deserves its name, which is said to be a corruption of the old Flemish *Beckpungen*, mouth-smart. *Beccabunga* may be, however, derived from the name by which the plant is still known in Germany, *Bach-bunge*; "bach" being, like our old English

"beck," the name for a stream. Another suggested derivation is from the old word "beck," a stream, and "bung," a purse, in allusion to its favourite habitat and the shape of the seed capsule. The Brooklime is commonly called in Scotland Water-purpie; and being esteemed an excellent purifier of the blood, it is frequently sold with water-cresses, to be eaten as a salad, but is too pungent to be generally agreeable. The leaves are much recommended by old herbalists to be made into diet drinks, to be taken in spring, and they are, doubtless, antiscorbutic.

9. **Common Speedwell** (*V. officinális*).—Leaves elliptical, shortly stalked, serrated; flowers in dense racemes; fruit-stalks erect; stem procumbent, creeping; capsule inversely egg-shaped, triangular, with a wide shallow notch, or straight, as if cut off; perennial. This is a very variable plant, having in one form a very downy stem and broadly egg-shaped downy leaves; in another being almost smooth; and in a third, having small egg-shaped, somewhat lanceolate leaves, and a capsule inversely egg-shaped in form, but without any notch: the stem, too, varies much in height in this Speedwell, which is abundant in many dry woods, though somewhat local. It bears its many-flowered clusters of blue flowers from May to July, but they are too pale and small to render this Speedwell as attractive as most of the genus. The plant was formerly very extensively used both in Sweden and Germany as a substitute for tea, and it had the old French name of *Thé de l'Europe*; while Danish writers of former days positively asserted that it was the identical tea of China. The Germans still prize the Speedwell tea; and Professor Martyn says that it forms a more astringent and grateful beverage than the Chinese tea; but Dr. Withering says, that an infusion of the Germander Speedwell makes a still better tea than this plant. In earlier days, when the Chinese tea was costly, and so rare that Pepys could, in 1661, note in his Diary, "Sent for a cup of tea, a China drink, of which I had never drunk before"—in such times Speedwell tea might prove a valuable acquisition to an English meal; but we, who have long been used to our daily tea and coffee, have learned to look upon these gentle stimulants as among our necessaries, and are rarely tempted to test the value of the infusions made from the plants of our own woods or fields. Speedwell tea, however, was believed by our fathers not only to afford present refreshment, but also to strengthen the frame; and Dutch writers on plants termed this one "Honour and Praise." *Fluellin*, too, was one of its Welsh names, and the herb was highly valued by those who so called it, as well as by him who named it Paul's Betony. Boerhaave said of another of the Speedwells (*V. orientalis*), that he had cured with it a hundred different disorders; and Francus wrote a book solely on the virtues of this plant, which, according to his narration, had effected marvellous cures. Hoffman spoke very highly of the virtues of the Speedwell tribe, and many old French writers record cases of their usefulness; yet, except a slight degree of astringency, they do not seem to possess any peculiar powers, though they are all harmless.

10. **Mountain Speedwell** (*V. montána*).—Leaves stalked, broadly egg-shaped, serrated; fruit-stalks ascending; capsule roundish, notched at the base and summit, very large and quite flat, smooth, and with toothed edges; stem hairy, prostrate; perennial. This is not an uncommon species

in moist woods, having a weak trailing stem a foot or more long, and a few pale blue flowers growing in loose clusters from April to July. Its leaves are large, and the plant is remarkable for its large flat seed-vessels.

11. **Germander Speedwell** (*V. chamædrys*).—Leaves nearly sessile, egg-shaped and heart-shaped, and deeply serrate; racemes long and many-flowered; stem ascending, hairy; fruit-stalks ascending; capsules flat, inversely heart-shaped, deeply notched, fringed with hair, and shorter than the calyx; perennial. If there is one of the species deserving pre-eminently the old English name of Speedwell, it is this. In the latter end of April, when breezes are all abroad,

"Giving a gentle kiss to every sedge,"

and when often we may hear the shower "sing i' the wind," when violets and primroses are in all their glory, and the daisies scattered over every meadow, then we may find clusters of this Speedwell. The flowers are large and numerous, looking like sapphires among the emerald spring verdure, having petals of brilliant blue, veined with darker lines, and varied by the while pollen on the blue anthers. The leaves are wrinkled, and sometimes deeply serrated; and the plant has often, at the end of summer, on the upper part of the stem, a number of whitish-green hairy knobs, which, if we cut them open, we find to inclose two or three insects in the chrysalis state, and of a yellowish or dull orange colour. This Speedwell is commonly by country people called Cat's-eye; and some poets, like Keats, call it Eyebright, though the true eyebright is the euphrasy. Wordsworth evidently intends our brilliant Veronica, in the sonnet in which he speaks of the eyebright:—

"Ere yet our course was graced with social trees,
It lack'd not old remains of hawthorn bowers,
Where small birds warbled to their paramours
And earlier still was heard the hum of bees.
I saw them ply their harmless robberies,
And caught the fragrance which the sundry flowers,
Fed by the stream with soft perpetual showers,
Plenteously yielded to the vagrant breeze;
There bloom'd the strawberry of the wilderness,
The trembling eyebright show'd her sapphire blue,
The thyme her purple, like the blush of even"

Elliott also says:—

"Blue eyebright, loveliest flower of all that grow
In flower-loved England."

The French call the Speedwells *Véronique;* the Germans, *Ehrenpreisse;* the Dutch, *Eerenprys;* the Italians, Spaniards, and Portuguese, *Veronica.*

The following lines were written by H. G. Adams for this volume:—

'Ah! the blue Germander Speedwell,
On the grassy bank that groweth;
Ah! the little twinkling Cat's-eye
'Twixt the April showers that bloweth,
Peeping, creeping, hither, thither,
Hiding midst the herbage rank;
And when cometh sunny weather,
Starting up as though to thank
Him who sendeth genial sunshine
Gladdening the flow'rets all;
What, a rhyme for such a common—
Very common weed, and small?

"Common, aye; the hand that fashion'd
Peerless rose and lily stately,
Sent the honeysuckle twining
Round the elm that stands sedately;
Clothed with golden grain the upland,
And with grasses green the vale,
Furnishing to man and cattle
Nourishment that shall not fail,
That same hand the Speedwell fashion'd
Perfect in its every part;
'Tis a common weed, but show me
Such a work of human art.

1. COMMON SPEEDWELL.
   Veronica officinalis.
2. MOUNTAIN S.
   V. montana.
3. GERMANDER S.
   V. chamædrys.
4. IVY-LEAVED SPEEDWELL.
   V. hederifolia.
5. GREEN PROCUMBENT FIELD S.
   V. agrestis.
6. BUXBAUMS SPEEDWELL.
   V. buxbaumii.
7. WALL SPEEDWELL.
   V. arvensis.
8. VERNAL S.
   V. verna.
9. BLUNT FINGERED S.
   V. triphyllos.

"Therefore shall the little Speedwell
Have a tribute rhyme from me:
Eyebright, Cat's-eye, or Germander,
Fluellin, Paul's Betony,
Whatsoever name 'tis call'd by,
Ornament of rural ways,
Once thought worthy—why not now so?—
Of all honour and all praise;
In my rural walks I've often
Mark'd it with admiring eyes,
With its notch'd leaves and blue blossoms,
Brighter than Italian skies.

"It hath relatives a many,
One with ivy-shapen leaves,
That o'er gardens and o'er corn-fields
Quite an emerald network weaves;
One that groweth with the stonecrops
From interstices of walls;
One o'er banks and fields that runneth,
On whose flower a grey shade falls:
In the early spring we see them,
See them through long summer days,
And when stacks are piled, and autumn
Sets the woodlands all ablaze.

"Wherefore should I speak of others?
All are beautiful, all free
For the weakest hand to gather,
For the dimmest eye to see;
Springing in the shady woodlands,
Growing in the sunny fields,
On the wild, and by the wayside,
Every one a lesson yields,
Mute yet eloquent—all preachers
Of God's goodness are the flowers;
All are teachers, all beseechers
Of these stubborn hearts of ours.

"Unto me the little Speedwell,
Insignificant and small,
Though I love them all, yet speaketh
Even louder than they all.
If I see it in the morning,
'Speed thee well!' it seems to say;
At the noontide, 'Hast thou sped well?
Over now is half the day.'
In the evening, 'Night is coming!
Hast thou made thy calling sure?
Speed thee well, while light is with thee,
Not for long will it endure!'"

* * * * *Flowers axillary, solitary; flower-stalks recurved.*

12. **Ivy-leaved Speedwell** (*V. hederifólia*).—Leaves all stalked, heart-shaped, with 5—7 large teeth or lobes; segments of the calyx heart-shaped, fringed with fine hairs; capsule of 2 swollen lobes, each of which contains from 2 to 4 large black seeds; stem prostrate. No species of this genus is more easily recognised than this, for its floral and stem-leaves are all exactly similar, and all shaped like ivy leaves, of uniform bright green hue, and somewhat thick and succulent. This Speedwell is one of the earliest blooming of the species, and is very common on hedgebanks and in cultivated fields, growing up among the tender blades of corn as early as March, and its trailing stems pretty thickly set with leaves. Its blossoms are not nearly so large as those of the Germander, but are brightly pale blue, and are welcome to the lover of wild flowers, because coming while flowers are yet but thinly scattered over dale and hill. Many can say with Robert Nichols:—

"Beautiful children of the wood and field,
That bloom by mountain streamlets 'mid the heather,
Or into clusters 'neath the hazel gather,
Or where by hoary rocks ye make your bield,
And sweetly flourish on through summer weather,
I love ye all!

"Beautiful things ye are, where'er ye grow:
The wild red rose, the Speedwell's peeping eyes,
Our own blue-bell, the daisy that doth rise
Wherever suns do fall or winds do blow,
And thousands more of blessed forms and dyes,
I love ye all!"

The seeds both of this and the next species are very useful to those of our singing birds which remain with us all the winter, or which in early spring come back to their adopted summer homes.

13. **Green Procumbent Field Speedwell** (*V. agréstis*).—Leaves all

stalked, heart-shaped and egg-shaped, cut, deeply serrated; sepals oblong, blunt; stamens inserted at the very base of the corolla; capsule of 2 swollen keeled lobes; cells 6—10-seeded, sometimes hairy all over, at others fringed on the keel; annual. This is a very abundant plant in waste places and cultivated fields in March, April, and May. In one of those premature seasons to which Shakspere refers—

"Short summers lightly have a forward spring,"

we have found this flower in the first week of February, its little pale blue petals gleaming among its leaves, and have thought how well it deserved its old name of Winter-weed. It flowers throughout the summer, and the lower part of the corolla is usually white, but a form of this plant occurs in which the petals are wholly bright blue, and the egg-shaped sepals acute, and this is the *V. polita* of some writers. The prostrate stems are three or four inches long, slightly hairy. Bishop Mant thus describes the plant:—

"The pastured mead or stubble field,
Or garden lightly scann'd, may yield
The first of all its numerous kind,
Procumbent Speedwell. See inclined
On arching stalk of bright blue dye,
And with a round and pearl-like eye,
Distinct it shows; its pendent head
Pluck, but be cautious lest you shed
The petals of the tender flower,
And shorten thus the little hour
At most allotted it to grace
With transient bloom its native place."

Everyone familiar with this plant will acknowledge the accuracy of this description, and must have marked the peculiarly fugacious nature of its petals, which are often shattered while the plant is being gathered.

14. **Buxbaum's Speedwell** (*V. buxbaúmii*).—Leaves egg-shaped and heart-shaped, stalked and deeply serrate, shorter than the flower-stalks; segments of the calyx lanceolate and acute; stem procumbent; capsule inversely heart-shaped, triangular, of 2 swollen sharply-keeled lobes, which are flattened upwards; cells 8—12-seeded; annual. This plant is much taller and stouter than the preceding, more hairy, and has far handsomer flowers. These blossoms, which expand from May to September, are as large and as brightly tinted as those of the Germander Speedwell. Its stem is long and trailing, and it is found in fields and cultivated places. It appears to have been introduced with clover-seed about the year 1825, and from that time to have rapidly spread wherever man by tillage has prepared a suitable soil for it. It is now thoroughly established and plentiful throughout the country.

* * * * * *Flowers in spikes or racemes; flower-stalks erect or nearly so.*

15. **Wall Speedwell** (*V. arvénsis*).—Leaves heart-shaped and egg-shaped, with rounded notches at the margin, lower leaves stalked, upper ones lanceolate and entire, resembling bracts, longer than the flower; raceme somewhat spiked, many-flowered, lax; capsule inversely heart-shaped, flattened, fringed on the keel with slender hairs; annual. This is a common plant of fields and old walls, having, from April to September, inconspicuous light blue flowers with a white eye, almost hidden by the upper leaves, which, differing in form from the lower ones, may be regarded as bracts. The whole plant is downy, and, growing in arid plains, is often covered with dust. It occurs sometimes on gravelly or sandy heaths.

16. **Vernal Speedwell** (*V. vérna*).—Leaves cut and pinnatifid, the upper ones or bracts lanceolate, entire; flower-stalks shorter than the calyx; capsule broad, inversely heart-shaped, flattened and margined with roundish lobes, with 12—14 thin flat seeds; annual. This very rare Speedwell has an erect stem, from one to three inches high, simple or branched at the lower part. It is much like the last species, and has in April and May pale blue flowers, which are crowded on the spike. It occurs on sandy heaths about Thetford, Bury, and Mildenhall in Suffolk.

17. **Blunt-fingered Speedwell** (*V. triphýllos*).—Leaves broadly egg-shaped, cut, the lower ones stalked, upper ones or bracts sessile, fingered, with obtuse segments; flower-stalks longer than the calyx; capsules inversely heart-shaped, flattened, with roundish fringed lobes, and many seeds, which are concave on one side; annual. This, too, is a very rare species, readily known by its deeply-fingered leaves, and by the dark blue flowers, which expand in April. Its stem is erect, with spreading branches, and is about four or five inches high. The plant has been found at Acomb near York, and on sandy fields about Mildenhall and Bury in Suffolk.

2. Bartsia (*Bártsia*).

1. **Alpine Bartsia** (*B. alpína*).—Stem erect, hairy; leaves opposite, egg-shaped, slightly clasping, bluntly serrated; flowers in a terminal, short, leafy spike; root-stock woody, creeping, and perennial. This is a rare plant of alpine pastures, and has been chiefly found in Westmoreland, Yorkshire, and other northern counties of England, growing in the grass among rocks, or in similar rocky and mountainous regions of Scotland. The stem is without branches, square, and from four to eight inches high. The flowers expand from June to August, are large, of deep, dull purplish-blue, and downy.

2. **Yellow Viscid Bartsia** (*B. viscósa*).—Leaves opposite, upper ones alternate, lanceolate, cut, and serrated; flowers solitary, axillary, distant, upper ones crowded; stem, leaves and calyx all viscid; root fibrous and annual. This Bartsia grows in damp places, as marshes and wet meadows, in several parts of the west of England and Wales, in the south-west of Scotland, and the south of Ireland. It is readily known by its large solitary handsome yellow flowers, and by the clammy down which invests the whole plant. It is not common, and except that its flowers do not form a cluster, its general appearance is much like that of the yellow rattle. The stem is round, unbranched, and from three to twelve inches high, and the flowers open from June to October.

3. **Red Bartsia** (*B. odontítes*).—Leaves narrow, lanceolate, distantly serrated, upper ones or bracts alternate; flowers in 1-sided racemes; corolla downy, lobes of the lower lip oblong, obtuse; stem branched, erect, downy; annual. In one variety of this plant the leaves taper at the base, and the calyx segments are as long as the tube of the corolla, and the capsule oblong. In a form described as *Odontites rotundata*, the leaves are broader at the base, the calyx-segments broadly triangular, one-half the length of the tube, the capsule almost rounded. The Red Bartsia is a very common plant in cornfields or on dry banks, but it has little beauty and no odour with which to

attract the wanderer in the field. It is a much-branched herbaceous plant, with a slender stem, about a foot high, and numerous spikes of dull pink flowers, having the floral leaves of a dim pinkish-brown. The hue of these leaves, of the calyx, flowers, and stem, is, in some specimens, pretty nearly uniform, and of dull red, and the plant rarely exhibits any brightness of colour. The blossoms may be seen from July to September. Cattle will not eat it, and are said to abstain from the grass to the distance of some inches from the plant. All the plants of this genus are parasitic upon the roots of other plants.

The genus Bartsia is associated with the memory of Dr. John Bartsch, a Prussian botanist, and a friend of Linnæus. The great Swedish botanist gave the genus its name, and he also gives an interesting and melancholy narrative of his friend in his "Flora Suecica." Names like these serve among botanists to recall to affectionate memory many persons after whom they were called. Sir Joseph Hooker records the effect on his mind, when in the remote regions of the Himalaya, of finding plants of the genera named respectively after Staunton, Buckland, and Wallich. "Such great names," he observes, "there brought before the traveller's notice, never failed to excite lively and pleasing emotions: it is the ignorant and unfeeling alone who can ridicule the associations of the names of travellers and naturalists with those of animals and plants."

3. Eyebright (*Euphrásia*).

Common Eyebright (*E. officinális*). — Leaves egg-shaped, deeply toothed; flowers axillary, smooth, lobes of the lower lip margined; annual. We have often remarked that few, save botanists, know the name of the little Eyebright, common as it is on dry meadows, where the grass attains little luxuriance, or on grassy chalky inland slopes, or on cliffs frowning over the wide-stretched ocean. It is a pretty little blossom of white hue, its petals marked with lilac, while in some cases a lilac tinge is on the whole flower, save where it is variegated with a dash of yellow. The stems are from two to six inches high, little branched, and low on the chalk cliff; but when growing on the better soil of the pasture, it is often much branched, and altogether more luxuriant. It was formerly, in this country, called Euphrosyne, a name significant of joy or pleasure, perhaps because of the elegance of its flower; perhaps because of the relief believed to be given to the sufferer by its medicinal properties. Our Euphrasy is a corruption of this name, as is also the French *Eufrase*, and the Italian *Eufrasie*. The Germans call the plant *Augentrost*, and the Dutch *Oogentroost*. The little blossoms expand from May to September.

Botanists who have made a special study of the Eyebright consider that a number of species, very similar, yet with sufficiently distinctive characters, are lumped together under the name of *E. officinalis*. As these distinctions, however, are of a character not likely to be appreciated by the popular reader, the present editor is content to refer those who desire a closer acquaintance with Eyebright to "A Monograph of the British Species of Euphrasia," contributed to the *Journal of Botany*, 1897, by Mr. F. Townsend, M.A., F.L.S., who recognises no less than fourteen native species.

1. ALPINE BARTSIA.
   Bartsia alpina.
2. YELLOW VISCID BARTSIA.
   B. viscosa.
3. RED BARTSIA.
   B. odontites.
4. COMMON EYEBRIGHT.
   Euphrasia officinalis.
5. COMMON YELLOW RATTLE.
   Rhinanthus crista-galli.
6. LARGE BUSHY YELLOW RATTLE.
   R. major.

The Euphrasy is slightly bitter and astringent, and was formerly very much valued as a remedy for ophthalmic disorders. Lightfoot says that the Scotch make an infusion of the plant with milk, and anoint the patient's eyes with the liquid. All our old herbalists used it in various ways. Culpepper says of it: "If the herb was but as much used as it is neglected, it would half spoil the spectacle-maker's trade; and a man would think that reason should teach people to prefer the preservation of their natural before artificial spectacles; which, that they may be instructed how to do, take the virtues of Eyebright as followeth: The juice, or distilled water of Eyebright, taken inwardly in white wine or broth, or dropped into the eyes, for divers days together, helpeth all infirmities of the eyes that cause dimness of sight. Some make conserve of the flowers for the same effect. Being used any of the ways, it also helpeth a weak brain or memory." He adds, that, mixed with strong beer and drunk, or the powdered herb made into an electuary with sugar, and taken, it "hath the same powerful effect to restore the sight decayed through age: and Arnoldus de Villa Nova saith, it hath restored sight to them that have been blind a long time before." Gerarde, too, recommended the use of the plant in nearly the same manner, both to take away "darknesse and dimnesse of the eyes," and that it might "comfort the memorie"; and he directs that the plant should be gathered during its flowering season for "physicke's use."

It is not wonderful that, having such universal repute, the poets of old times should have referred to it. Thus we find Milton representing the Archangel as clearing the vision of our first father—

> "Then purged with Euphrasy and rue
> His visual orbs, for he had much to see."

Michael Drayton says—

> "The fumitory get, and Eyebright for the eye,
> The yarrow wherewithal he stops the wound-made gore."

So, too, we find Spenser saying—

> "Yet Euphrasie may not be left unsung,
> That gives dim eyes to wander leagues around."

Thomson, in later days, influenced probably by the earlier poets, as much as by popular notions, says also—

> "If she whom I implore, Urania, deign
> With Euphrasy to purge away the mists
> Which, humid, dim the mirror of the mind."

A friend of Lobel is recorded to have lost his eyesight by the use of the plant; but this is not likely, as the Eyebright, when infused, gives a good eye-water, possessed of a slight astringency, though, as an internal remedy it must be quite powerless. It is still in use among the descendants of some of the old "simplers." The author, on going into a small shop in Dover saw a quantity of the plant suspended from the ceiling, and was told that it was gathered and dried as being good for weak eyes. The person who had gathered it told her of a wonderful cure which had been performed in his family by its use; and as the narrator was one in whose general truthfulnes

much confidence might be placed, the details of the cure were listened to with interest, although from past experience the listener well knew how strangely causes and effects were often misunderstood in relations of this kind. All faith in the efficacy of the Eyebright in this case was soon lost, as the narrator proceeded to tell how the patient had been previously stone blind for many years, and had been cured by eating pieces of the Euphrasy, gathered fresh from the neighbouring cliffs. A French botanist who wrote in "L'Encyclopédie des Sciences" remarks, that the virtues of this herb, as a cure for ophthalmia, must be altogether imaginary, because the distilled water of the plant, to which the virtue was ascribed, is absolutely scentless, and is, in fact, simply water, without any medicinal property. The juice, however, is apparently useful in some form of ophthalmic complaint; for we are assured by Professor Kranichfeld that it has been very successfully employed in catarrhal affections of the eye. The plant is a root-parasite.

4. Yellow Rattle (*Rhinánthus*).

1. **Common Yellow Rattle** (*R. crista-galli*).—Leaves narrow, oblong, tapering to a point, serrated; flowers in loose spikes; bracts egg-shaped, deeply serrated; annual. This is an abundant plant on many damp pastures, though somewhat local. The stem is about a foot or a foot and a half high, often much branched, of pale, yellowish-green, usually speckled with purple. The flowers form a loose spike at its upper portion, having large pointed bracts beneath. They are yellow, and are very small compared to the pale green, shining, inflated calices. As the flowers fall off and the fruit ripens, the loose seeds rattle in their husky cases, and we then discover the aptness of the familiar name of the plant. The crested bracts procured for it the botanic and common appellation of Cock's-comb, which it has also in many European countries besides ours. The Italians call it *Cresta di gallo;* the French, *Cocrête des prés;* in Germany it is familiarly termed *Hahnenkamm*, and in Holland *Haanekam.* It abounds in meadows in the north of Europe; and the Swedes, who call it *Stallergräs*, regard the rattling of its seeds in the wind as an indication that the season has arrived for gathering in the hay, though on our own meadows the grass is mowed while the Yellow Rattle is in flower. In England it is disliked by the owners of pasture lands, as the cattle, if they do not leave it altogether untouched, yet are not fond of it. In the year 1839, when the author of these pages was visiting a village in Essex, great annoyance was expressed by many owners of pastures at the unusual amount of this plant among the grass. The grass was said by the farmers to be "burned" by the Yellow Rattle, and much inquiry was made both as to the cause of its increase, and also as to the injury which it was considered to do to the meadows.

In the year 1847, M. Decaisne published, in the *Comptes Rendus*, his opinion that the injury done to the grass by the Rattle was caused by the parasitic nature of this plant. As British botanists had hitherto considered that we had but one green-leaved parasite, the mistletoe, and that our parasites in general were brown and leafless, this peculiarity had not been suspected in England. M. Decaisne's statements, however, led to experiments in this country, by which it was ascertained that the Yellow Rattle grows on the

roots of the grasses, and it has since been proved that some other of the Scrophularineæ are also parasitic. Professor Henslow found that plants of the Rattle when growing at a distance from other plants did not thrive; that they were dwarfed in growth, flowered but in two specimens; and that finally they all withered, without producing seed. A single plant which grew near to some wheat, attained its usual dimensions; but the Professor failed to observe whether the seeds were perfected.

The Yellow Rattle is, in some parts of Kent, called Snaffles. It is termed in Ireland Rattle-grass, Penny-grass, and Henpenny-grass.

2. **Hairy Yellow Rattle, Large Bushy Yellow Rattle** (*R. major*).—Leaves linear, lanceolate, upper ones tapering to a point; flowers in crowded spikes; calyx smooth, appendage of the upper lip of the corolla egg-shaped or oblong; bracts egg-shaped, pointed; annual. A plant with broader and serrated leaves, hairy calices, and egg-shaped bracts, and which is usually the largest and stoutest form of the genus, is sometimes described as a variety of the Common Yellow Rattle, and is also the *R. hirsutus* or *R. villosus* of other writers. The authors of the "British Flora" remark: "Mr. Bentham observes to us in a letter, that now, since it has been proved that this genus is parasitical, it is probable that all the supposed species ought to be united; an opinion in which we quite agree."

The Large Bushy Yellow Rattle is found in corn-fields in the north of England, and is described as having more dense and bushy spikes of flowers than the Common Yellow Rattle, and yellowish bracts, each terminating in a green point. The appendages to the upper lip of the corolla are purple; the seeds are thick at the edge, with a membranous margin.

5. Cow-wheat (*Melampyrum*).

1. **Crested Cow-wheat** (*M. cristátum*).—Spikes densely imbricated; bracts heart-shaped, tapering to a point, and cut into slender segments; leaves linear, lanceolate, acute, entire, with dark veins beneath; annual. This is a very handsome plant in the month of July, with its dense 4-sided spikes of yellow flowers, which have a dash of purple on the inner lip, and grow each one in the axil of a floral leaf. These bracts are of deep rose-colour at the base, and the stem is about a foot or a foot and a half high. The plant is found in corn-fields, woods, and thickets in the eastern counties of England.

2. **Purple Cow-wheat** (*M. arvénse*).—Spikes lax, oblong; bracts egg-shaped, lanceolate, and gradually narrowing, pinnatifid, with awl-shaped segments; calyx-teeth as long as the tube of the corolla; corolla closed; annual. This species, which is still more handsome and more rare than the last, is found in woods, on dry banks and in corn-fields in the Isle of Wight and about Norwich. The spikes of flowers are much larger than in the crested species, and extremely beautiful from the varied tints which they and their floral leaves display. The bracts are green and purplish rose-coloured, the blossoms yellow, variegated with rose-colour and purple. This plant, which is abundant on some corn-lands, is a very troublesome weed to the farmer. Mr. Baxter, referring to it, says: "Dr. Bromfield tells me that the value of the wheat on certain farms in the land behind St. Lawrence, in the

Isle of Wight, is greatly lowered from the admixture of the seeds, which cannot be separated from the grain by winnowing, the specific gravity of both being nearly the same. These seeds impart a bluish colour to the flour, and give it, when made into bread, an unwholesome flavour. The plant is known in that neighbourhood as Poverty-weed, and various traditions are afloat as to the manner of its introduction to this island, which, however, is not of very recent date, the species having existed in some of its present stations for at least forty years, and is by some supposed to have come over from Jersey, where, however, it is not known at present as indigenous or introduced." The writer adds, that "this unwelcome though splendid addition to the flora of this island probably arose from an importation of wheat from Norfolk, or some other maritime county. It infests only such corn-lands in the island as lie over chalk, or contain a large proportion of calcareous earth." The plant is in flower from June to August, and is eaten by cows, though unpleasing to sheep.

3. **Common Yellow Cow-wheat** (*M. praténse*).—Flowers axillary, in pairs, all turning one way; corolla four times as long as the calyx, lower lip longer than the upper; leaves in distant pairs, narrow, tapering, smooth; upper bracts with one or two teeth at the base; perennial. Varieties of this plant occur, in one of which the bracts are quite entire, the plant is smaller and somewhat succulent; in another the leaves are bristly, the bracts with spreading teeth at the base. Though this plant is called Meadow Cow-wheat, yet it is not found in pastures, but in woods and thickets. It is a very common, but not a very attractive, plant, having a slender stem about a foot high, with straggling opposite branches. The flowers, which appear from May to August, are tubular, of very pale yellow, sometimes almost cream-coloured. It is much relished by domestic animals, particularly kine; and Linnæus says that the richest and yellowest butter is made from the milk of animals grazing on spots where it is abundant. It is to this circumstance that the genus owes its English name; while that of *Melampyrum*, black wheat, originated in the form of the seed, which is much like a grain of wheat, conjoined with the blackness which the plant assumes in withering. This hue is most remarkable when the plant has been preserved in an herbarium, where, after a time, not a spot of green or yellow is perceptible in its universal inky tint, a characteristic of most of these root-parasites. An old notion prevailed that this plant turned into wheat; hence one of its names was the Mother of Wheat. The French call the plant *Melampire;* the Germans, *Wachtelweizen;* the Dutch, *Akkerig zwartkoom;* the Italians, *Melampiro;* the Spaniards, *Trigo de vaca;* and the Swedes, *Skälle.*

4. **Lesser-flowered Yellow Cow-wheat** (*M. sylváticum*).—Flowers axillary, all turning one way; corolla open, about twice the length of the calyx, the lips equal in length, the lower one turning downwards; bracts entire; leaves slender, lanceolate, in distant pairs; annual. This is a smaller species than any of the preceding, and is a rare plant of mountainous woods of the north of England, but more frequently found in Scotland. The stem is about a foot high, the flowers about half the size of the common species, of deeper yellow, and very dissimilar in shape. It flowers in July.

The whole of these Cow-wheats are root-parasites.

1. CRESTED COW-WHEAT.
   Melampyrum cristatum
2. PURPLE C. W.
   M. arvense.
3. COMMON YELLOW C. W.
   M. pratense.
4. LESSER FLOWERED YELLOW C. W.
   M. sylvaticum.
5. MARSH LOUSEWORT.
   Pedicularis palustris.
6. PASTURE L.
   P. sylvatica.

6. Lousewort (*Pedicularis*).

1. **Marsh Lousewort** (*P. palústris*).—Stem solitary, erect, branched; leaves pinnatifid, segments oblong, blunt, and lobed; calyx egg-shaped, downy, 2-lobed, lobes deeply cut; perennial. From June to September this is a very pretty marsh-flower, sometimes giving to a portion of boggy land a rich red colour by its numerous large crimson blossoms, often with a spotted calyx. Its branches have frequently a purple tinge, and the deeply-cut leaves are extremely pretty. The plant is from twelve to eighteen inches in height. Both this and the following species are considered to produce lice in sheep feeding on the pasture where they abound; and hence their familiar name, though there is little doubt that the vermin attacking these animals are as much to be attributed to want of tone produced by the unhealthy nature of marshy grounds as to the plant itself. Lousewort, however, like the sun-dews, spear-worts, and several other of our bog-plants, has some degree of acridity. Mr. Purton says that the healthiest flocks when fed on the next species (*P. sylvática*) soon become unhealthy; and he adds, that farmers should be careful to eradicate it. Both sheep and goats eat the plant, and both our British species were formerly considered good vulneraries. The leaves of a species known as *P. lanáta* are said by Ainslie to be used in the Kurile Isles as a substitute for tea. That remarkable and magnificent flower, peculiar to Lapland and Sweden, named by Rudbeck *P. sceptrum-carolinum*, is the great ornament of the genus; but our native kinds are both pretty flowers, and we have several handsome garden species. Most of the genus grow at great elevation above the level of the sea. Throughout Europe the plants are generally known by names synonymous with their scientific and English names. Thus the French call them *Pédiculaire*; the Germans, *Läusekraut*; the Dutch, *Luiskruid*; the Italians, *Pidocchiera*; the Spanish, *Gallarito*; the Danes, *Luusurt*. In many of our country places they are called Red Rattle.

2. **Pasture Lousewort** (*P. sylvática*).—Stem branched at the base, erect; branches long, spreading, prostrate; leaves pinnatifid; segments lobed; calyx oblong, smooth, irregularly 5-lobed, inflated, and marked with green veins crossing each other; perennial. This is quite a common plant of moist heaths and pastures, especially abounding in hilly places. It is of much lower growth than the last species, and its flowers are paler, being either rose-coloured or white. The smooth calyx has five unequal leaf-like lobes, its primary stem is very short, and the branches lie over the ground thickly clad with their prettily-cut leaves. The flowers, which are large, expand from June to August. Both species are root-parasites.

Figwort (*Scrophulária*).

Calyx with fine rounded lobes, corolla purplish, upper lip with a scale on its inner side—the aborted fifth stamen.

1. **Knotted Figwort** (*S. nodósa*).—Leaves egg-shaped, somewhat heart-shaped, smooth, doubly and acutely serrated, the lower serratures largest; stem with four acute angles; cymes lax; bracts small, lanceolate, and acute;

capsules egg-shaped; root-stock tuberous and perennial. The knots, which give to this plant its specific name, must be looked for in the roots, and not on the stem. The root consists of a number of white tubers, generally round, and strung together by fibres, and varying from the size of a pea to that of a large marble. These knobs, resembling the glandular swellings produced by disease, apparently induced the older observers of plants to believe them to be efficacious in these maladies, and hence the name of the genus. The plant had much popular repute in former days, for Gerarde censures "divers who doe rashly teach that if it be hanged about the necke, or else carried about one, it keepeth a man in helth." The Knotted Figwort is a tall slender plant, three or four feet high, bearing in June and July repeatedly-forked panicles of flowers. These flowers are very small for the size of the herb; they are almost globular, and of dull purple, mingled with greenish-yellow. The whole plant has a disagreeable odour, like the elder, and the roots are slightly bitter.

2. **Water Figwort** (*S. aquática*).—Smooth; leaves oblong, heart-shaped, blunt; flowers in close panicles; bracts linear, blunt; sepals with a broad membranous margin; stem 4-winged; root-stock creeping, perennial. This plant is common by the sides of ditches and streams, attracting our attention by its size, rather than its beauty. Its stem is commonly from two to five feet high, hollow and succulent, but the editor of this edition has measured examples in Cornwall that exceeded ten feet. The flowers are from eight to fifteen in a cluster, of purplish-brown colour. Its leaves are serrated with rounded notches, and are larger and of dark dull green. The stems become very rigid as the plant dries, and the Rev. C. A. Johns observes, that they are then very troublesome to anglers, as their lines become entangled among the withered capsules. The plant was formerly called Water Betony, Bishop's-leaves, and Broad-wort, and in France it is termed *Herbe de Siége*, because it is said that during the siege of Rochelle by Cardinal Richelieu, in 1628, the soldiers of the garrison supported themselves during a season of famine by eating the roots of the plant, which abounded in the moist lands in the neighbourhood. Though many good botanists have stated that this is the plant which afforded relief in the emergency, yet the roots are so small that the author of these pages thinks that the Knotted Figwort, often found in moist places, was probably the species to which the soldiers were indebted, as its roots, though slightly bitter, are much larger. A decoction of the leaves of the Water Figwort is used in country places as a medicine for some domestic animals, but cattle refuse its herbage, and it is eaten only by the goat. Wasps are very fond of its flowers, the carrion-like colour and rank odour appearing to have special reference to their tastes; the shape of the corolla, too, corresponds with the shape of their heads. Mr. Babington says that these flowers are sometimes milk-white. The French call the Figworts *Scrofulaire;* the Germans, *Braunwurz;* the Dutch, *Schrofelkruid;* the Italians, *Scrofalaria;* the species was very generally applied some centuries ago in most European countries as a cataplasm to tumours. M. Marchant stated some years since, in his Memoirs of the French Academy, his opinion that this plant is identical with the *Equetaia* of the Brazilians, which is so celebrated as correcting the disagreeable flavour of the medicinal senna;

1. KNOTTED FIGWORT.
Scrophularia nodosa.
2. EHRHART'S F.
S. ehrharti.
3. WATER F.
S. aquatica.
4. BALM LEAVED F.
S. scorodonia.
5. YELLOW F.
S. vernalis.

and for a time the Edinburgh College, in their infusion of that drug, sanctioned its use. It was, however, in all probability found to be unfitted for that purpose, as it is now discontinued.

3. **Ehrhart's Figwort** (*S. ehrhárti*).—Leaves smooth, egg-shaped, lanceolate, acute, somewhat heart-shaped, sharply serrated, lower serratures smaller; stem and leaf-stalks winged; cymes lax, few flowered; sepals roundish, with a broad membranous margin; corolla greenish below, brown above, scale 2-lobed; bracts leaf-like, lanceolate, and acute; rootstock creeping, perennial. This plant occurs in a few wet places in various parts of England and Scotland, having from July to September dark lurid purple flowers. The stem is from two to four feet high. Under the name of *S. umbrosa*, Hooker classes this as a sub-species of *S. aquatica*.

4. **Balm-leaved Figwort** (*S. scorodónia*).—Leaves triangular, heart-shaped at the base, downy on both sides; stem downy, bluntly 4-winged; cymes lax, few-flowered; bracts linear, blunt; sepals with a broad membranous margin; perennial. This species is at once distinguished from all the others by its downy, wrinkled leaves, not unlike those of the garden balm, and having large teeth that are again serrated. It is found only in Cornwall and S. Devon, at Tralee in Ireland, and in Jersey, where it occurs in moist places. Its flowers, which appear in July, are dark purple, and its stem is two or three feet high.

* * *Calyx of* 5 *acute segments; corolla yellow without a scale.*

5. **Yellow Figwort** (*S. vernális*).—Leaves downy, heart-shaped, acute, twice serrated, stem winged, hairy; cymes axillary, corymbose, with leaf-like bracts; sepals without a membranous margin; perennial. This is the only ornamental species of Figwort found in Britain, and, though an introduced species, of local occurrence, is occasionally found in great abundance. In some of the wilder parts of Berkshire, for instance, it is so plentiful as to form a feature in the landscape. It is very unlike the other species of Figwort; its swollen yellow flowers, with a greatly contracted mouth, much resembling one of the *Calceolarias*, but its foliage is of a remarkably bright green colour. Its stem is about two feet high, and it flowers early in spring, remaining in blossom till June. Although we have but few British species of *Scrophularia*, yet about 120 are enumerated as belonging to the floras of other lands.

8. Foxglove (*Digitális*)

Purple Foxglove (*D. purpúrea*).—Leaves large, egg-shaped, lanceolate, downy beneath, wrinkled, and with rounded or sharp notches at the margin, lower ones tapering to a footstalk; sepals oblong, acute, downy, 3-nerved; corolla obtuse, smooth externally; upper lip scarcely cleft, segments of the lower lip rounded; perennial. The *Digitalis* received its name from Fuchs, who so designated the plant from *digitabulum*, a thimble, in allusion to the form of the flower; and a similar reference is found in its familiar names almost everywhere. Our name is a corruption of Folk's glove, or Fairies' glove, these imaginary sprites having been known as the "good folk." The French term it *Gant de notre Dame*, and *Gantelée;* the Germans, *Fingerhut;*

and the Dutch, *Vingerhoed*. Turner, who wrote his book on plants in the reign of Queen Mary, says, "There is an herbe that groweth very much in Englande, and specially about Norfolke, about the conie holes, and in divers woddes, which is called in English Foxglove. It is named of some in Latin *Digitalis;* that is to say, Thimble-wort. It hath a long stalke, and on the toppe many flowers hanginge downe like belles or thimbles." Cowley fancifully said—

> "The Foxglove on fair Flora's hand is worn,
> Lest while she gather flowers she meet a thorn."

Yet these pretty poetical fancies are not so interesting as the teaching of living naturalists, that the form of the flowers has relation to the shape and size of the humble-bees that alone can fertilize the incipient seeds, whilst smaller insects intent on the honey, but unable to earn it by a return service, are forbidden by an array of hairs within.

The stem on which the bells hang is usually three or four feet high, and the flowers are pale purple, beautifully spotted within, and from May to July they form a spike-like cluster, sometimes a foot long. We have scarcely another wild flower which can at all compete in stately beauty, in loveliness of form and hue, with our magnificent Foxglove, the "emblem of punishment and pride," as the poet has called it. Many a bard has told how it gladdened grove and hill, and many a lover of wild flowers has gazed for hours on spots enlivened by its beauty, while the artist has seized it as a foreground for his picture of rural scenery.

This flower, though unknown in many districts of this kingdom, is abundant in others, especially in hilly regions, apparently preferring a sandy or gravelly soil, producing an abundance of seed, which sometimes springs up after it has lain long in the earth. This was the case a few years since on one of the hills of Malvern, where, when the soil was turned up, the Foxglove sprang up plentifully. On one part which was made into a pathway, the young plant was soon crushed by the passing footsteps, but it grew up in rows on each side of the path, giving it much the formal appearance of having been planted there by the gardener. It often grows either among the short grass of the hills, or amid the longer blades of the meadow, or by the bushes of hedgerows; and the author never saw it more luxuriant than in Kent. In the neighbourhood of Saltwood Castle, near Hythe, the plant is very abundant, growing in the woods and pastures among some of the most magnificent orchises; and we have gathered thence more than one specimen nearly six feet high, with its bells forming a pyramid two feet long. The inside of the bell is beautiful, with its rich purple spots and silken hairs, and its dashes of dark purple, which may be seen through its substance marking its exterior surface, while a beautiful white variety of the flower occurs in many woods. When this White Foxglove is removed to a garden, however, it often becomes more or less tinged with the original lilac or purple hue from which it varied.

But the *Digitalis* may be praised for its use, as much as for its beauty; for the leaves, after having been well dried in the sun or by the fire, yield a very important medicine. Many country medical practitioners procure these leaves, and themselves prepare the extract, as the plant should be gathered

1. PURPLE FOXGLOVE.
Digitalis purpurea.

2. GREAT SNAP-DRAGON.
Antirrhinum majus.

3. LESSER SNAP-DRAGON.
A. orontium.

just at the season of its flowering in order to ensure its efficacy. The influence of the *Digitalis* over the action of the heart, and its power of restraining in a short time the too rapid circulation of the blood, as well as its other uses, render this medicine of much worth in the hands of the skilful practitioner, though its powerful and dangerous properties make it safe only in the hands of one well acquainted with diseases and their remedies. "The history of this plant," says Dr. George Johnston, "might afford a practical censure to such as sneer at the pursuits of the botanist, and are continually asking, '*Cui bono?*' for it grew neglected, until Dr. Withering, a botanist, made known its virtues." The Foxglove had indeed been praised by old herbalists; as Gerarde, in 1597, wrote of various uses to which it was applied, though he had not apparently discovered its influence over the action of the heart; and Parkinson, who was an apothecary of London, and herbalist to Charles I., regretted some years after, that few physicians used it, and that it was almost entirely neglected. This author says: "And it hath beene of later experience found also to be so effectuall against the falling sicknesse, that divers have been cured thereby." Since Dr. Withering called the attention of physicians to this plant, the medicine has been in almost daily use, not in England only, but on the Continent; and in Paris it is so highly valued that the flower is often painted on the door-posts of an apothecary's dwelling. Modern practitioners do not, however, include among their remedies that outward use of its leaves which suggested the old Italian proverb, "*Aralda tutte piaghe salda.*" "Aralda (Foxglove) salveth all sores." Handsome as is our wild Foxglove, it seems scarcely to equal a flower which Colonel Mundy describes as resembling it, and which is the growth of Van Diemen's Land. "There are," says this writer, "several very pretty Iris-like bulbs in the moister soil, and in the lowlands of the Botany scrub. I noticed a crimson and orange flower, like the Foxglove in form, very handsome, but so hard and horny in texture, that the blossoms actually ring with a clear metallic sound as you shake them. It might be the fairies' dinner-bell calling them to their dew and ambrosia. Alas! there are no 'good people' in Australia. No one ever heard of a ghost, or a bogle, or fetch here. All is too absolutely material to afford a relic for imagination and superstition."

The Foxglove clump has a good effect either in garden or shrubbery, and our common species is a frequent ornament of the parterre. Several exotic species also, as the Great Yellow Foxglove, are beautiful plants. This is a native of Germany, and is very luxuriant on mountains of that land as well as in the Swiss Alps. The Madeira Foxglove is another magnificent species, which, in the gardens of Ghent, sometimes grows to the height of ten feet.

9. SNAPDRAGON (*Antirrhínum*).

1. **Lesser Snapdragon** (*A. orontium*). — Leaves mostly alternate, linear, lanceolate; spikes very few-flowered, lax; segments of calyx longer than the corolla; annual. This is a very much smaller plant than the following species, and its flowers have little to attract in their dull purplish tint. The species is readily known from any allied plants by its leafy sepals,

which are very much longer than the little blossom. Though somewhat local, this is not an unfrequent plant in corn-fields, and the author often finds it as a weed in gardens in Kent. The stem is about a foot high, and the leaves are dark green. It is in flower from July to October.

2. **Great Snapdragon** (*A. május*).—Leaves lanceolate, alternate, those of the branches opposite; flowers in spikes; segments of the calyx egg-shaped, blunt, shorter than the corolla; upper lip of the corolla cleft; perennial. Everyone who has lingered among old walls and ruins during our summer months, has seen the rich crimson blossoms of the Snapdragon waving to the wind which sweeps over castle-turret or church-tower. Nor is the bright flower wanting on the wall of more modern gardens. It is certain this plant should not be recorded as wild; for though it grows in innumerable places without culture, yet it has naturalized itself near to the garden ground, where once it was planted. Like the wall-flower, though so frequent on walls it is not confined to them, for it often occurs in chalk-pits and limestone quarries. It varies in colour from deep purplish crimson to pale pink or white, and in the garden, several varieties raised by nurserymen and florists assume every tint of red, yellow, and white, or are streaked like a carnation. Children press the corolla till they open the palate, when it bears that resemblance to the imaginary dragon which induced our fathers to give it its common name, though its similarity to the mouth of the pet animal renders its other common appellation of Rabbit's-mouth sufficiently expressive. Bull-dogs, Lion's-snap, Toad's-mouth, and Dog's-mouth, are also old names of the plant, which the French call *Muflier;* the Germans, *Löwenmaul;* the Dutch, *Leeuwebek;* the Italians and Spaniards, *Antirrino.* Vogel says that in many countries the common people attribute a supernatural influence to the Snapdragon, and believe it to serve as a counter-charm, rendering all influences of the evil eye and of maledictions ineffectual. The seeds are numerous, and yield an excellent oil, much used in Persia for domestic purposes; while in Russia the plant is sown in fields for the sake of this oil. A species used in Cochin China as food for swine is called *A. porcinum.*

10. TOAD-FLAX (*Linária*).

* *Stems and branches trailing.*

1. **Ivy-leaved Toad-flax** (*L. cymbalária*).—Leaves roundish, heart-shaped, 5-lobed, smooth; flowers solitary, axillary upon long stalks; perennial. This plant is familiarly known to many persons by the name of Mother of Thousands. It is indeed very prolific, both in flowers and leaves, and, when once established on a bank or stone wall, will soon spread over it. The long slender rooting stems attach themselves to the crumbled earth among crevices of buildings, and droop down so as to have suggested one of its familiar names, Maiden Hair. It is a common plant on the walls of gardens, and doubtless was, in former years, cultivated there, for it is a naturalized and not an indigenous species. It often combines with ferns and mosses to give a verdant tapestry to the old church or castle; its shoots sometimes winding in at a window, in which case the leaves are much smaller, for want

1. IVY-LEAVED TOAD FLAX.
Linaria cymbalaria.
2. ROUND-LEAVED TOAD FLAX.
L. spuria.
3. SHARP POINTED FLUELLIN.
L. elatine.
4. CREEPING PALE BLUE T.F.
L. repens.
5. YELLOW TOAD FLAX.
L. vulgaris.
5.a.b. FLOWERS OF VAR.
Peloria.
6. LEAST TOAD FLAX.
L. minor.
7. UPRIGHT PURPLE TOAD FLAX.
L. pelisseriana.

Pl. 160.

of light. A specimen of this plant was exhibited in 1850 to the Chancellor of the Exchequer, by a deputation who waited on him respecting the abolition of the tax on windows. This plant had lived for some years in a Wardian case, on the top of a model of an abbey. The branches, which grew towards the light, invariably produced leaves of the full size, with perfect flowers and fruit; whilst those branches which trailed down between the model and the window, and were nearly without light, never produced either blossom or fruit, and the leaves were not more than one-tenth the ordinary size. As all the other conditions of the plant were the same, this dwarfed and starved state of one part of the Toad-flax arose solely from the want of light, and was well calculated to show the depressing effects of darkened dwellings.

Dr. Joseph Hooker, when in the Himalaya, saw a similar plant, the yellow branched Toad-flax, winding itself over every ruined wall of some ancient fortress in the Soane Valley, just as the ivy-leaved species does in this country. If the Himalayan kind should have the same singular mode of depositing its seeds, we wonder not that its fertility should be equal. Our Ivy-leaved Toad-flax has a peculiarity almost without a parallel in the vegetable kingdom. The capsules before ripening turn round towards the wall on which the plant so often grows, and place themselves in a crevice or hole, so as to shed the seeds, when ripened, in a place where they may thrive, instead of scattering them on the ground, where they would be wasted. The leaves of our species are shaped much like those of the ivy; are smooth, thick, and succulent, often of a pinkish-purple beneath, and they have a warm pungent flavour like the water-cress. The plant is often placed in a pot hung from the cottage ceiling, where it sometimes attains great luxuriance. The author once measured a leaf from a cottage plant which was two inches and three-quarters across. The flowers expand from May to September; they are small, and of a pale or dark bluish-lilac.

This plant is used medicinally in India, and apparently with some success. It formerly acquired much celebrity as being one of the ingredients of that terrible poison known in France as the *Poudre de Succession*. The dreadful art of slow and secret poisoning, by which the victim seemed sinking from the ravages of lingering disease, is less possible now that chemistry has enabled us to detect more readily the presence of any deleterious substance. But it is not much more than a century since this wicked art had acquired such perfection that the celebrated Tophania, a woman residing at Naples, sold her cruel compound; and found so many ready to share her wickedness, that she is said to have caused the death of six hundred persons. Garelli, the physician to Charles VI., King of the Two Sicilies, analysed her poison, and found it to be composed of an arsenical oxide, dissolved in a liquid called *Aqua Cymbalariæ*, which was made of the Ivy-leaved Toad-flax.

> 'Hearts have been found—thank Heaven! not often found—
> So soil'd and stain'd by the polluting air
> And weariness of cities, men so vile,
> And women, too, alas! sometimes, who've mix'd
> Poison with the pure perfumes of a flower."

The Ivy-leaved Toad-flax, from being believed to mingle with the *Poudre*

de Succession, acquired, however, a notoriety of which it was undeserving, for the water distilled from it is simply an astringent, and by no means a powerful one; it was, therefore, doubtless used in these deleterious preparations from an ignorant misconception of its properties.

We seldom look upon

> "The ivy-foliaged Toad-flax twined,
> With purplish tendrils,"

without recalling an anecdote which was related by Schultz, in his "Botanical Visit to England," and which gives us a pleasanter association with this flower. Shortly after the publication by Linnæus of his arrangement of plants, the latter, then a young man and little known, came over to England. He went to Oxford, and there visited Dillenius and Sherard. The latter botanist gave him a hearty welcome, but Dillenius, probably from that dislike to innovation more prevalent then than now among scientific men, received him very coldly. During a conversation which the two Oxford friends held together, Dillenius remarked that this was the young fellow who was putting botany and botanists into confusion. Though unacquainted with the English language, the quick ear of Linnæus detected the word *canfuschien*, as Dillenius with his German accent pronounced it; and readily connecting it with the Latin *confusio*, he at once understood the feeling of the botanist towards himself. They all three walked together up and down the Oxford garden, when Dillenius stopped before a wall ornamented with masses of the Ivy-leaved Toad-flax. Some difficulties respecting the structure of this plant had recently occupied the attention of the Professor, and he now questioned Linnæus as to his opinion on the subject. The doubtful points were all clearly understood by the young Swede, and fully explained in his usual lucid manner; other difficulties respecting various plants were discussed in the conversation which followed, and were explained with equal felicity, and the prejudice which Dillenius had at first entertained for Linnæus was succeeded by regard and admiration for his genius and science. Before the three botanists separated, they had become friends; but on taking leave, Linnæus could not refrain from saying to Dillenius that he should have been very sorry to have brought confusion into the garden at Oxford. Dillenius blushed at this reference, and immediately apologised for his unkind but inadvertent expression.

2. **Round-leaved Toad-flax** (*L. spúria*).—Leaves roundish, egg-shaped; spur curved upwards; flower-stalks hairy; stem procumbent; annual. This plant trails over the ground in many gravelly and sandy cornfields, but is chiefly confined to the east and south-east of England. It is abundant in many parts of Norfolk and Suffolk, and not uncommon in Kent. It is in blossom from July to November, and the flowers are small, solitary, and axillary, yellow, with the upper lip purple. The foliage is of a greyish dusty-looking green colour, and the leaves have sometimes one or two teeth on the margin. In some cases the flowers are regular, with five spurs.

3. **Sharp-pointed Fluellin or Toad-flax** (*L. elátine*).—Leaves broadly halberd-shaped, downy; flowers solitary, axillary, on long stalks; annual. This species much resembles the last in the form of its flowers, and the colour of its leaves, which is never of a bright green; and, like it, is a trailing

plant, flowering in the same months in corn-fields. The leaves, however, form a very distinct specific character, being sharply pointed, and halberd-shaped, with the exception of a few at the base of the plant. It grows both on chalk and gravel, and, though a local plant, is not rare. This species is more bitter than either of the others, and was formerly much used as a medicine in cutaneous disorders. The corolla is yellow, the upper lip lined with purple.

* * *Stems erect, ascending, or diffuse.*

4. **Creeping Pale Blue Toad-flax** (*L. répens*).—Leaves linear, scattered, or partly whorled, smooth; flowers in racemes; sepals lanceolate, as long as the spur, but shorter than the capsule; seeds angular and wrinkled; perennial. This plant is rare, occurring chiefly on rocky places and chalky banks, especially near the sea. It has a slender-branched and leafy stem, from a foot to a foot and a half in height; and its leaves are whorled below. The flowers, which appear from July to September, are white or pale lilac, marked with darker purple veins, and having a yellow palate. A form known as *L. sepium* is a hybrid between this and *L. vulgaris*.

5. **Yellow Toad-flax** (*L. vulgáris*).—Leaves smooth, linear, tapering to a point, crowded; flowers in dense spikes; sepals smooth, egg-shaped, acute, shorter than the capsule or spur; perennial. This is the most common of all the species of Toad-flax. In May we may see its light green stems beset with slender grass-like leaves, of a pale sea-green hue, adorning the hedge-bank or border of the corn-field, and sometimes peering up among the growing corn. During August and September it is among the most showy flowers of our landscape; and the traveller, far away in the wilds of Siberia, sees it growing there with the yellow silver-weed potentilla, and dreams of home and harvest-fields. Its large and beautiful corollas are pale yellow, with a deep yellow spot, and are crowded into a close cluster from one to three inches long, on a stem which is one or two feet high. Country people call the plant Butter-and-eggs, Pattens-and-clogs, and Flax-weed. It is *Das Flackskraut* of the Germans, and *La Linaire* of the French. The leaves have a bitterish and somewhat saltish taste, and emit, when bruised, a peculiar but not very powerful odour. The plant is still sometimes infused, and taken medicinally; but it should be carefully used as an internal remedy, as its properties are powerful, though an infusion of its flowers is a good external application for cutaneous affections, and the decoction, employed as a bath, has also proved very successful in removing eruptions on the skin. In Sussex it was formerly called Gall-wort, and was put into the water drunk by poultry, in order to cure them when drooping. It was greatly esteemed as a remedy for jaundice, and the juice is described as "cleansing the skin wonderfully of all sorts of deformity," and also as strengthening the sight by being dropped into the eyes, though we would warn our readers against this latter use of the herb. The flowers have been employed in dyeing yellow, and, mingled with milk, they are often placed on tables in farmhouses, as they serve to attract and destroy flies. A variety (*peloria*) is sometimes found with a regular corolla and five spurs.

6. **Upright Purple Toad-flax** (*L. pelisseriána*).—Smooth; leaves

linear, the lower ones whorled, the upper alternate, those of the barren shoots broader and ternate; flowers in short racemes; flower-stalks as long as the bracts; sepals linear, acute; annual. This plant occurs in one or two places in Jersey. Its stems are erect, about a foot high, and it has, in June, purple flowers marked with darker veins.

7. **Diffuse Toad-flax** (*L. supína*).—Smooth; stem diffuse or ascending; flower-stalks and sepals glandular, hairy; leaves linear, blunt, mostly whorled; sepals narrow, shorter than the capsule; perennial. This plant has been introduced, in all probability, with ballast, in the few spots on which it is found. Its recorded places of growth are Catdown Quarries, Plymouth, Poole in Dorsetshire, Hayle, and St. Blazey's Bay, Cornwall. Mr. Babington thinks that the plant may possibly be truly wild at the Cornish Stations, but Sir J. D. Hooker excludes it from the British list. The flowers are in short racèmes, yellow, the throat and spur marked with slender purple lines. The stem is but a few inches high, and much branched at the base. The plant is in flower during July and August.

8. **Least Toad-flax** (*L. minor*).—Leaves linear-lanceolate, blunt, mostly alternate, covered with glandular down; flowers solitary, axillary; flower-stalks three times as long as the calyx; segments of the upper lip of the corolla spreading; annual. This species is found in sandy and gravelly fields, chiefly in the eastern and south-eastern parts of England, and rarely in Scotland. It bears, from May to October, small flowers, of which the lower lip is yellowish; and the tube, upper lip, and spur purplish. The stem is erect, from four to ten inches high.

11. Monkey-flower (*Mimulus*).

Yellow Monkey-flower (*M. luteus*).—Leaves opposite, egg-shaped, the lower stalked, the upper sessile; flowers solitary, from the axils of the leaves, yellow. This North American plant has now got thoroughly established along many rivers throughout the country. It flowers from July to September. The stigma is irritable, the two lobes into which it is divided folding together when touched on the inner surface. This is probably a provision for the retention of pollen deposited by visiting insects.

12. Mud-wort (*Limosélla*).

Common Mud-wort (*L. aquática*).—Leaves lanceolate, narrow at the base, on long stalks; flowers on stalks which are shorter than the leaf-stalks, axillary and crowded; annual. This little plant would be likely to escape the notice of any who were not intent on searching carefully the muddy shores for their vegetable curiosities. It grows on the borders of ponds, and on the edges of small standing muddy pools in many parts of England and Scotland, but it is not a common plant. Its creeping root throws up a number of leaves on long foot-stalks. They are quite smooth, and overtop the minute blossoms, which are pale pink or white, with purplish anthers, and appear in June and July. They are succeeded by a globose capsule, which opens by two valves to distribute the wrinkled seeds. The Mud-wort is sometimes called Bastard Plantain. The French call it *La Limoselle;* and the Germans, *Das Sumpfkraut.*

1. COMMON MUDWORT
Limosella aquatica.
2. CORNISH MONEY WORT
Sibthorpia europea.
3. GREAT MULLEIN
Verbascum thapsus.
4. MOTH M.
V. blattaria.
5. LARGE FLOWERED PRIMROSE LEAVED M.
V. virgatum.
6. YELLOW HOARY M.
V. pulverulentum.
7. WHITE M.
V. lychnitis.
8. DARK M.
V. nigrum.

13. SIBTHORP'S MONEY-WORT (*Sibthórpia*).

Cornish Sibthorpia (*S. europœa*).—Leaves roundish, lobed and notched; flowers axillary, 5-cleft, on very short stalks, solitary; perennial. This, one of the most graceful of our plants, is very common in Cornwall growing on the shady banks of springs and streams, and forming masses of delicate green. Its trailing stems are clad with the hairy, roundish kidney-shaped leaves, which obtained for it its familiar name. The stems are hairy and very slender; and the tiny flowers, which expand from June to September, are of a pale flesh-colour. This elegant little plant, which occurs also in Devonshire, Hampshire, Sussex, Wales, Kerry, and the Channel Islands, received its generic name from Dr. Humphrey Sibthorp, the Professor of Botany, who succeeded Dillenius at Oxford, and who is well known to botanists by his works on the plants of Greece, as he travelled into that country for the purpose of identifying the flowers and trees mentioned by classic writers.

14. MULLEIN (*Verbáscum*).

Leaves running down the stem, woolly.

1. **Great Mullein** (*V. thápsus*).—Stem simple, leaves large, oblong, somewhat egg-shaped, woolly on both sides, all running down the stem; flowers in dense spikes; corolla wheel-shaped, two of its stamens longer than the rest and smooth, the other three hairy; biennial. This tall Mullein, with its stem four or five feet high, is not unfrequent on waste grounds and banks of which the soil is chalk, gravel, or sand. It is also often planted in gardens, not merely because it is ornamental, but because bees are very fond of the flowers. The stem is angular and winged, and, like the leaves, it is so clothed with grey, woolly down, that we wonder not at the poet's description—

"The antique Mullein's flannel leaves,"

or that the peasant calls it Flannel-flower. Nor is its woolly covering adverted to in the names of our own land only, for the Germans call it *Wollkraut*, and the Dutch *Wollekruid*. In Italy the familiar name for the Mullein is *Tassobarbasso*, and in Spain *Gordolobo*, while the French call it *Bouillon blanc*, and the Portuguese *Verbascum bianco*. When we look at its tall tapering spike of light yellow flowers, we are not surprised to find that in a period when candles were commonly but in churches it should have suggested to our fathers the old names of High Taper, Candlewick Taper, and Torches; while it was also known, in common with some other species, by the names of Hare's-beard and Bullock's Lung-wort. It is frequent in several parts of Europe, growing, as with us, on dry banks and field borders, and is said to have taken its specific name from its abundance in the Isle of Thapsos. Mr. Purton, in his "Midland Flora," remarks, that this species has considerable medicinal qualities; and other authors mention that its golden yellow flowers, when dried in the sun, yield an unctuous ointment. Kalm, when in Pennsylvania, remarks of this plant, "The Swedes settled here call it Tobacco of the Savages." They thought that the Indians smoked the leaves, but their

opinion is probably not correct. They bound the Mullein leaves, however, about their arms and feet to cure ague.

* * *Leaves smooth, glandular, or hairy; upper ones half clasping, running down the stem; flowers solitary, or in pairs.*

2. **Moth Mullein** (*V. blattária*).—Leaves oblong, smooth, notched; root-leaves often lobed at the base, upper ones pointed; flowers solitary, stalked, collected into a long spike-like loose tuft; hairs of the filaments purple; annual. This tall and slender Mullein has shining leaves, and its flowers, which expand in July and August, are of a rich yellow colour. Though not a generally distributed plant, it is occasionally found south of Norfolk and Staffordshire, in the south and west of Ireland, and in the Channel Isles, growing on banks of a gravelly soil. Many botanists consider that it is not truly wild in this country. It appears to be peculiarly disliked by cock-roaches, and there is no better method of expelling these troublesome insects than by strewing its leaves over places to which they resort. The specific name is from *blatta*, a cockroach; and if Gerarde's statement is true, it deserves also its English name of Moth Mullein, for he says that moths and butterflies frequent the places where it is laid.

3. **Large-flowered Primrose-leaved Mullein** (*V. virgátum*).—Leaves twice serrated, slightly hairy, with glandular hairs, or in some cases quite smooth, egg-shaped, lanceolate, and toothed, those of the root somewhat lyrate, narrowing at the base; flowers from two to six together, shorter than the bracts; biennial. This rare plant, which is found in fields and on gravelly banks, is by some writers considered a sub-species or variety of the last species. Indeed, several so-called species of Mullein seem to run into each other, owing to the existence of hybrids, so that they have required much attention from botanists, who are not agreed as to their exact number. M. Schrader has published a learned monograph on the subject. The filaments of this species, like those of the last, are covered with purple hairs, but the racemes are more densely flowered.

* * * *Leaves woolly or powdery, not running down the stem; flowers in clusters.*

4. **Yellow Hoary Mullein** (*V. pulveruléntum*).—Leaves egg-shaped and oblong, slightly serrated, and covered on both sides with mealy wool, lower ones oblong and narrow, gradually tapering into a foot-stalk, the upper one sessile and pointed; stem rounded, panicled above, with spreading branches; biennial. This species is a common plant of the road-sides in Norfolk and Suffolk, and some other counties. It is, however, rare in other parts of this country, and is so extremely beautiful a flower, that we can but regret that it is not a more general ornament by our pathways. It is readily distinguished from any other Mullein by the mealy woolly down on both sides of its leaves, which in most cases may be easily rubbed off with the finger, but which appears in a variety of the species to be permanent. This is in the month of July a truly magnificent plant, its hundreds of large corollas being spread open to bee and butterfly, forming a golden rod on a stem three or four feet high, and beautifully varied with the scarlet stamens, which are covered with white hairs. The flowers are on very short stalks, and these, as well as the

calyxes, are covered with a thick wool. Mr. H. C. Watson questions its right to be considered a native.

5. **White Mullein** (*V. lychnítis*).—Leaves nearly smooth above, woolly and powdery beneath, with rounded notches at the margin; lower leaves oblong, wedge-shaped and stalked; upper leaves sessile, egg-shaped, and pointed, with a rounded base; stem angular and panicled, with ascending branches; biennial. This species occurs chiefly in chalky districts, and in some parts of the kingdom is not uncommon on the hedges and borders of fields and pastures. It is less showy when in flower than most of its family, its blossoms, though numerous, being small and generally cream-coloured, though sometimes yellow; they are on short stalks, and their filaments have white hairs. They expand in July and August. The lower sides of the leaves are covered with thick wool, and the down of this, as well as of some other species, has been on some occasions used as tinder or as wicks to lamps; hence its name of *Lychnítis*, from the Greek for lamp. Morin states that a good yellow dye for cotton may be obtained from this plant; and adds, that an infusion of its flowers was formerly used by the Roman ladies to tinge their hair with that rich yellow hue once so much admired in Italy, and long after prized so highly in our own country when Spenser wrote:—

> "Instead of yellow locks, she did devise
> With golden wire to weave her curlèd head
> Yet golden wire was not so yellow thrise
> As Florimell's faire heare."

This also is a doubtful native.

6. **Dark Mullein** (*V. nigrum*).—Leaves nearly smooth above, woolly or downy beneath, with rounded notches at the margin, oblong heart-shaped, upper ones nearly sessile, lower ones on long stalks; flowers in dense tufts on a long crowded spike; stem angular; perennial. This species bears its handsome spike of rather large, rich yellow flowers from July to September, and their filaments are beautifully fringed with bright purple hairs. It is a tall plant, not so stout as the Great Mullein, and much darker in hue, the leaves being of a deep green. It grows on banks and way-sides on gravelly and chalky soils, and is abundant and truly wild in the midland and southern counties, but in the north of England and Scotland is believed to be naturalized. It is said to possess slightly narcotic properties, and to have been used for intoxicating fish. A large number of species of Mullein are to be seen adorning our gardens. They are brought chiefly from the south of Europe, and some of them, having escaped in several spots from cultivation, have been described as native plants. Such are the *V. phœniceum*, *V. ferrugineum*, and some others, but they are neither wild nor naturalized to any extent. Parkinson, in his "Garden of Flowers," describes a species called the Woody Mullein, or French Sage, which appears to have been much prized in olden times. He says the leaves are somewhat resembling sage in form and roughness, but not in scent. "Whereof," he says, "our people gave it the name of Sage, calling it French Sage (whereas it is as great a stranger in France as it is in England), yet they doe with this as with many other things, calling those French which come from beyond the seas; as, for example, all or most of our bulbous flowers they call 'French flowers.'"

Order LXII. LABIATÆ—LABIATE TRIBE.

Calyx tubular, regular or 2-lipped; corolla irregular, mostly 2-lipped (labiate), the lower lip largest, and 3-lobed; perfect stamens 4, 2 longer than the others, or sometimes wanting; ovary deeply 4-lobed; style 1; stigma 2-cleft; fruit of four seeds, each of which is inclosed within a distinct shell or rind, and all lying at the bottom of the calyx. This is a large order, marked by very distinct and obvious features, the plants having square stems, usually opposite leaves, labiate or 2-lipped flowers, and a 4-lobed ovary, with a single style arising from the base of the lobes, and, in a large number of the genera, four stamens, two long and two short. Not a single plant of the order possesses any poisonous properties, the Betony only being slightly acrid; many are highly aromatic, and more or less bitter, and have cordial, tonic, and stomachic virtues; some, which abound in essential oil, are used as stimulants. Many, like the Balm, Sage, Marjoram, and Thyme, are valued as seasoning herbs, and several, like the Mint, for medicine. Others, as Lavender and Rosemary, are largely employed in perfumery. The latter plant is mingled with other ingredients in eau-de-Cologne, and the essential oil of several, like the Sage and Lavender, contains so much camphor that it has been supposed that the separation of it might become an object of commerce. Rosemary yields camphor in a great degree; and Professor Lindley, as well as other botanists, considered an infusion of this plant decidedly useful as a wash for improving the hair both in strength and quantity. The flavour of the Narbonne honey is ascribed to the bees feeding on Rosemary flowers, as that of the honey of Hymettus was said to owe its taste to their having gathered it from wild Thyme. The Labiate plants are most abundant in temperate climates, and in our country their flowers are more frequent during autumn than at any other season.

* *Stamens* 2.

1. GIPSY WORT (*Lýcopus*).—Calyx 5-toothed; corolla 4-cleft, nearly regular. Name from *lucos*, a wolf, and *pous*, a foot, from a fancied resemblance of the leaves to a wolf's paw.

2. SAGE, OR CLARY (*Sálvia*).—Calyx 2-lipped; corolla gaping; filaments forked. Name from the Latin *salvo*, to heal, from the healing properties of the genus.

* * *Stamens* 4.

† *Corolla nearly regular, its tube scarcely longer than the calyx; stamens spreading upwards.*

3. MINT (*Méntha*).—Calyx equal, 5-toothed; corolla 4-lobed, with a very short tube. Name, the Latin name of the plant.

† † *Corolla 2-lipped, the tube about as long as the calyx; lips nearly equal in length; stamens nearly equal.*

4. THYME (*Thýmus*).—Calyx 2-lipped, 10—13-ribbed, the throat hairy; corolla with the upper lip notched, the lower 3-cleft; flowers in heads or whorls. Name, the Latin name of the plant.

5. MARJORAM (*Origanum*).—Calyx 5-toothed, 10—13-ribbed, the throat hairy; flowers in spikes, which are imbricated with large bracts. Name from the Greek *oros*, a mountain, and *ganos*, joy, from the favourite station of the plants.

† † † *Corolla with the upper lip very short or wanting, the two lower stamens longer than the upper.*

6. GERMANDER (*Teúcrium*).—Calyx 5-cleft; corolla with the upper lip deeply 2-cleft, lower 3-cleft. Name from Teucer, who is said to have been the first to use it in medicine.

7. BUGLE (*Ajuga*).—Calyx 5-cleft; corolla with a long tube, upper lip very short, lower 3-cleft. Name said to be corrupted from *Abija*, an allied plant.

† † † † *Corolla 2-lipped, lips unequal; calyx 5—10-toothed; stamens longer than the tube of the corolla.*

8. BLACK HOREHOUND (*Ballóta*).—Calyx funnel-shaped, with 5 sharp equal teeth; corolla with the upper lip erect, concave, lower 3-lobed, the middle lobe largest, heart-shaped. Name from the Greek *ballo*, to reject, from its unpleasant odour.

9. MOTHERWORT (*Leonúrus*).—Calyx with 5 prickly teeth; corolla with the upper lip nearly flat, very hairy above; anthers sprinkled with hard shining dots. Name from *leon*, a lion, and *oura*, a tail.

10. HEMP-NETTLE (*Galeópsis*).—Calyx bell-shaped, with 5 prickly teeth; corolla with an inflated throat; upper lip arched, lower 3-lobed, with two teeth on its upper side. Name from *galeë*, a weasel, and *opsis*, aspect, from a fancied resemblance of the flower to the snout of that animal.

11. WEASEL-SNOUT (*Galeóbdolon*).—Calyx with 5 ribs, and as many nearly equal teeth; corolla with the upper lip arched, lower in three nearly equal acute lobes. Name from *galeë*, a weasel, and *bdolos*, a fetid scent, because supposed to have the odour of a weasel.

12. DEAD-NETTLE (*Lámium*).—Calyx bell-shaped, with 10 ribs and 5 teeth; corolla with an inflated tube, upper lip arched, lower 2-cleft, with 1 or 2 teeth at the base on each side. Name from the Greek, *laimos*, a throat, from the form of the flower.

13. BETONY (*Betónica*).—Calyx egg-shaped, with 10 ribs, and 5 sharp teeth; tube of the corolla longer than the calyx, upper lip slightly arched, lower flat, of 3 unequal lobes. Name altered from the Celtic *bentonic*, *ben* signifying head, and *ton*, good.

14. WOUND-WORT (*Stáchys*).—Calyx tubular, bell-shaped, with 10 ribs and 5 equal teeth; tube of the corolla as long as the calyx, upper lip arched, lower 3-lobed, the side lobes bent back before withering. Name from the Greek *stachys*, a spike.

15. CAT-MINT, GROUND IVY (*Népeta*).—Calyx tubular, 15-ribbed, and 5-toothed; tube of the corolla longer than the calyx, upper lip flat, straight, notched, or 2-cleft, lower 3-lobed. Name of doubtful origin.

† † † † † *Lips of the corolla unequal; calyx* 5—10 *toothed; stamens shorter than the tube of the corolla.*

16. WHITE HOREHOUND (*Marrúbium*).—Calyx with 10 ribs and 5 or 10 spreading teeth, the throat hairy; tube of the corolla longer than the calyx, upper lip straight, very narrow, deeply 2-cleft, lower 3-lobed. Name of doubtful origin.

† † † † † † *Lips of the corolla unequal; calyx 2-lipped.*

17. CALAMINT (*Calamíntha*).—Calyx 13-nerved, tubular, upper lip 3-cleft, lower 2-cleft, throat hairy. Name from *kalos*, good, and *mentha*, mint.

18. WILD BASTARD BALM (*Melíttis*).—Calyx bell-shaped, much wider than the tube of the corolla, variously lobed; upper lip of the corolla nearly flat, entire, lower with three rounded, nearly equal lobes; anthers approaching in pairs, and forming a cross. Name from the Greek *melitta*, a bee, on account of the honey yielded by the flower.

19. SELF-HEAL (*Prunélla*).—Calyx flattened, and closed when in fruit; corolla with the upper lip nearly entire, arched, lower one 3-lobed; filaments 2-forked. Name from the German *braüne*, quinsy, which complaint it was supposed to cure.

20. SKULL-CAP (*Scutellária*).—Upper lip of the calyx bulged outward about the middle, and finally closing down like a lid over the fruit; tube of the corolla much larger than the calyx. Name from the Latin *scutella*, a little cup, from the form of the calyx.

1. GIPSY-WORT (*Lýcopus*).

Common Gipsy-wort (*L. europæus*).—Leaves deeply and irregularly cut, almost pinnatifid, and serrated, wrinkled and opposite; flowers small, in dense sessile whorls in the axils of the upper leaves; perennial. This is not a frequent plant in all parts of this kingdom, though in many counties it is found very commonly on the margins of rivers and stagnant waters. To the owner of the moist pasture land it often proves a very troublesome weed, for it has a creeping root-stock not easily removed, and ready to produce a new plant if but a small portion be left in the soil. No cattle will touch it, nor is it very ornamental to the meadow. Its flowers are crowded among the upper leaves, and Pollich says that he has sometimes counted eighty-two blossoms in a whorl. They are small, hairy within, white dotted with purple, which gives them a pale rosy appearance, and expand in July and August. It is said that the wandering people who wish to pass for gipsies use this plant to give a brown tint to their complexions, and the juice of the walnut-leaf has been affirmed to be used for the same purpose. The dye of the Gipsy-wort would probably prove the more permanent hue, for it will impart a black stain to almost anything which its juice touches. In France it has been used in giving a good deep brown hue to silk, wool, and linen. The cut leaves, which suggested the botanic name, which is taken from the Greek, are also alluded to in several of the familiar names by which the plant is called in other countries. The Germans term it *Wolfsfuss*; the Dutch, *Wolfspoot*; the Italians, *Licopo*. Our country people know it as the Water Horehound, and it is the *Marrube aquatique* of the French. It was

1. GIPSY-WORT.
   Lycopus europæus.
2. MEADOW SAGE.
   Salvia pratensis.
3. CLARY.
   S. verbenaca.
4. HORSE-MINT.
   Mentha sylvestris.
5. ROUND LEAVED M.
   M. rotundifolia.
6. SPEAR M.
   M. viridis.

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formerly termed *Lancea Christi*, and has been from earliest times praised as a febrifuge. It appears to possess powerfully astringent properties. It is rare in Scotland, but is found by Loch Lindore, Fifeshire; and at Delvin, Perthshire.

2. Sage or Clary (*Sálvia*).

1. **Meadow Sage** (*S. praténsis*).—Root-leaves oblong, heart-shaped at the base, irregularly notched at the margin, stalked; those of the stem few, sessile; uppermost narrow and pointed; bracts egg-shaped and heart-shaped; corolla thrice as long as the calyx, upper segment clammy; perennial. This plant varies in height from half a foot to more than two feet. It has wrinkled leaves, and its large bright blue flowers grow in whorls of about six, with short egg-shaped bracts. It is very rare, occurring on dry meadows and hedge-banks in a few English counties, such as Cornwall, Kent, and Oxford. The flowers are of two forms, a larger containing both stamens and pistil, and a smaller with perfect pistil only. Both produce honey for the attraction of insects, and the stamens are mature in advance of the pistil. These stamens are of a remarkable character: the tissue connecting the two anther-lobes is drawn out to a great length, so that whilst one is in the vaulted upper lip, the other, which is not fully developed, blocks the way to the honey. On this lower one being pressed by the head of the bee, the leverage thus applied brings down the upper anther upon the bee's back, which is thus smeared with pollen. When the pollen has all been distributed the style lengthens greatly, and the stigma arms reach out so as to come in the way of an insect visitor and to touch his back. Many botanists think that it is not a truly wild flower.

2. **Clary or Wild Sage** (*S. verbenáca*).—Leaves broadly egg-shaped, blunt, heart-shaped at the base, wavy at the edge, crenate and stalked, those of the stem sessile and clasping; corolla scarcely longer than the calyx; bracts oblong and pointed, about the length of the calyx; perennial. This is a very generally distributed plant, and is not unfrequent on dry chalky or gravelly pastures, especially near the sea. The blossoms are of a dull dark purple, growing in long spikes, and they would give one the idea of being never fully expanded, as their calyxes surround them, and are almost as long as the corollas. The square stem is about one or two feet high, bearing a few wrinkled, ragged-looking leaves. The whole plant has a strong aromatic odour, something like that of the garden Sage, but, except in its wrinkled leaf, it would not remind us of that plant, the foliage being of deep green hue, often tinged with purple, and marked with strong veins. In Scotland it occurs on the eastern side only.

This Sage is a native of Europe, Asia, and North Africa. Its seeds when put in water yield a mucilage which, placed within the eyelid for a few minutes, envelops any particle of dust which may pain the eye. Hence the name of the plant, Clary, or Clear Eye. Our old herbalists consider it one of the most efficacious of herbs in any complaint of the eyes; and not content, as we might be, to use the mucilage only, they all give directions that the seed itself should be laid under the eyelid. Gerarde says of this: "If put whole into the eies it cleanseth and purgeth them exceedingly from rednesse, inflam-

mation, and divers other maladies, and taketh away the pain and smarting thereof, especially being put into the eie one seed at a time and no more." The virtues of this plant were held in such estimation, that it obtained the name "*Officinalis Christi.*" An old writer, who justly disapproved of this name, says: "It is so called most blasphemously," and adds, "I could wish from my soul that blasphemy, ignorance, and tyranny were ceased among physicians, that they may be happy and I joyful." Like all the other old writers, he recommends that the seed should be placed in the eye, and left there till it dropped out: the pain, he says, "will be nothing to speak of," and if often repeated "it will take off a film which covereth the sight; a handsomer and safer and easier remedy it is a great deal than to tear it off with a needle."

Besides its uses in diseases of the eye, this wild Clary was recommended for a variety of maladies, and seems to have shared the esteem in which the Garden Sage was held, which had a high repute from remote antiquity. The saying of the ancients that "No man need die who had Sage in his garden," probably was the foundation of our own old English proverb:—

"He that eats Sage in May
Shall live for aye.'

Parkinson says: "Sage is much used in the month of May fasting, with butter and parsley, and is held of most to conduce much to the health of man;" and a work called the "Englishman's Doctor," printed in 1607, has some lines on the subject, which, if not very metrical, were doubtless deemed at least truthful:—

Sage strengthens the sinews, feaver's heat doth swage,
The palsie helps and rids of mickle woe,
In Latin (*Salvia*) takes the name of safety;
In English Sage, is rather wise than craftie;
Sith then the name betokens wise and saving,
We count it Nature's friend and worth the having.

The mucilage covering the seed of this plant is not to be seen till the seeds are moistened. Mr. Baxter says: "This mucilage I have found to be composed of very minute spiral vessels, similar to those first described by Professor Lindley as partly composing the mucous matter which invests the seeds of *Collomia linearis.* These spiral vessels are very numerous in the mucous matter which envelops the seeds of this Salvia. If a seed of this plant is placed on a glass-slip on the stage of a compound microscope, and then subjected to moisture by dropping upon it a drop or two of clear water, the spiral vessels may be seen almost immediately to dart forth from the outside of the testa, or skin, and to form a complete and beautiful radius round the seed. If the seed on which this experiment has been tried is allowed to dry upon the glass, the spiral vessels will remain in their extended position (their bases inclosed in the mucous matter, which also dries upon the glass), and may be preserved as an interesting object for the microscope at any future time."

A curious preparation of this plant seems to have been a favourite dish with our ancestors. Parkinson says: "The leaves taken dry, and dipped into a batter made of the yolks of eggs, flour, and a little milk, then fryed

with butter until they be crisp, serve for a dish of meate, acceptable with manie, unpleasant to none."

A very old name for the Clary was *Orvale sauvage.*

In Crete, where our Garden Sage (*Salvia officinalis*) grows in wild abundance on the rocks, and where its fragrance is far more powerful than in our land, the leaves are annually collected by the Greeks for medicinal purposes. They deem it of especial importance to gather the plant either on the first or second day of May, before sunrise. They also drink an infusion of Sage leaves as tea, and make sweetmeats of the galls which are formed by insects on one of the species common there, and which are sold in the markets under the name of Sage-apples. Sage tea is still drunk in our own villages during spring, as beneficial to the health, and the Chinese were said some years since to prefer this beverage to their own tea, and once traded with the Dutch, to the great advantage of the latter people, by exchanging with them one pound of tea for four pounds of sage leaves. Many species of Sage are valued in different European countries as medicinal herbs, and most of the continental names are, like the botanical one of *Salvia*, from *salvo*, to save or heal. Thus the French call the plant *La Sauge*, and the Germans *Die Salbey.* In Holland it is termed *Salie ;* in Italy and Spain *Salvia ;* in Portugal, *Salva ;* in Russia, *Schalweja ;* and in Poland, *Szalwia.* In Holland, the flowers of *S. glutinosa* are used to give a flavour to English wines, and a good wine is sometimes made in our own country by boiling the leaves and flowers of our common wild Clary with sugar. This is said to have the flavour of Frontignac. All the genus are wholesome and cordial, and many, by the beauty of their bright scarlet or blue flowers, contribute greatly to the adornment of our gardens.

In the meadows of Germany several very handsome species of Salvia are common wild flowers. Anna Mary Howitt, referring to the suburbs of Munich, says: "You stand in fields covered with a lovely odorous mosaic of flowers and deep rich grass. Here the tall Salvia rears its graceful spike of brilliantly blue flowers. Clovers, white and red, scent the air with their honeyed perfume ; the delicate eyebright, daisies, harebells, thyme, bugloss, yellow vetch, the white powdery umbel of the wild carrot, and the large mild-looking dog-daisies, bloom in a gay, delicious tangle." A form of *S. verbenaca* is found in the Channel Islands, and is sometimes described as a separate species under the name of *S. clandestina.* It is altogether a more slender plant, with more purple flowers, and the corolla-tube longer than the calyx.

3. Mint (*Méntha*).

* *Flowers in spiked whorls, or terminal heads.*

1. **Horse-mint** (*M. sylvéstris*).—Leaves almost sessile, egg-shaped, or lanceolate, serrated, and hoary beneath ; spikes almost cylindrical, scarcely interrupted ; bracts awl-shaped ; calyx with sharp teeth, and very hairy ; perennial. This Mint is not unfrequent in England on damp waste grounds, having, during August and September, its slender spikes formed of crowded whorls of pale lilac flowers, with long floral leaves. It has the strong but pleasant odour common to many of the Mint family, and often grows in

large masses by the waterside. The foliage, which is very white beneath, sometimes looks as if it were mouldy. In one variety it has lanceolate leaves, while in another form these are oval, and it is sometimes found with very crisp and ragged leaves.

2. **Round-leaved Mint** (*M. rotundifólia*).—Leaves sessile, elliptical, blunt, acutely crenate, wrinkled, shaggy beneath; spikes oblong, dense; bracts lanceolate; perennial. The whole of this plant is covered with long soft hairs; its stem is about two feet high, and the under part of the leaves shaggy with white down. It flowers in August and September, and its corollas are of a pale pink colour. It has a strong but disagreeable odour, and is not unfrequent by riversides and on bogs in England, though apparently not truly wild in Scotland, nor the north of England.

3. **Spearmint** (*M. víridis*).—Leaves sessile, lanceolate, acute, smooth, and serrated; spikes elongated, interrupted; bracts awl-shaped, and as well as the calyx either smooth or hairy; flower-stalks always smooth; calyx-teeth bristle-tipped; perennial. The stem of this Mint is from two to three feet high, smooth, distinctly four-cornered, erect, and branched, and its bluish-lilac flowers appear in August. It is more often found in the kitchen-garden or the cottage-bed, where it has been cultivated for culinary purposes, than on any wild spot. It grows, however, in some marshy places in several parts of England, and has a few Scottish localities, though some botanists regard it as a naturalized, and not a wild plant of this kingdom. Its strongly-scented flowers appear in April, and the flavour of its aromatic and pungent foliage is too well known to need any comment. Like others of the genus, it leaves a sense of coolness on the tongue. In modern times, and in this country, it is chiefly used either in medicine or as a sauce for roasted meat, or as an addition to green peas and other vegetables, as also an ingredient in soups; but in olden times it was in much more general use, as it still is in some other countries. Its culture in the garden is very ancient, as we know both by its old name of Our Lady's Mint, and also from lines in Chaucer's "Romaunt of the Rose":—

> "Then wente I forthe on my right honde,
> Downe by a little path I fonde
> Of Mintes full and fenell greene."

Parkinson tells that it was, in his time, boiled with mackerel and other fish, and that when dried it was put into puddings, and also among green peas, which were "broght for pottage." He adds, "If applyed with salte it is a good helpe against the biting of a mad dog, and when dockes are not to be had, they use to bruise Mintes and lay them upon any place that is stung by bees, wasps, and such like, and that to good purpose." Other writers of those days say, that Mint should be smelled, as being comfortable for the head and memory. Pliny had said of this herb, "The smell of Mint doth stir up the minde and taste to a greedy desire of meat." Margaret Paston, writing in 1746 about the illness of her cousin Bernay, says, "I remember yat Mynte, or water of millefole, were good for my cosyn Bernay to drinke, for to make him browke;" the word browke meaning to brook or digest meat. Gerarde considered that the savour or smell of the water of Mint "rejoyceth the heart of man, for which cause," he says, "they use to strew

it in chambers and places of recreation, pleasure, and repose, and when feasts and banquets are to be made." Even within the last century the odour of Mint has been considered as good for the head, and many would agree with Dodsley in his estimate of this and other plants. Referring to the works of the great Creator, he says:—

"He the salubrious leaf
Of cordial sage, the purple flowering head
Of fragrant lavender, enlivening Mint,
Valerian's fetid smell, endows benign
With their cephalic virtues."

The Americans seem to have retained some of the old liking for Mint, as their mint julep is a favourite beverage. Mint is highly valued in Eastern countries, and the custom yet existing of placing Mint in the synagogues of the Jews is probably a remnant of an old Oriental practice. Our Saviour's rebuke to the Scribes and Pharisees proves that mint was in common culture amongst the Jews. He, who deemed the uprightness of heart, and the love of God and our neighbour, as of far higher value than the outward observance even of some appointed duty, said, "Woe unto you, Scribes and Pharisees, hypocrites, for ye pay tithe of Mint, and anise, and cummin, and have omitted the weightier matters of the Law." There is little doubt that the word rendered anise by our translators should have been dill; and Rosenmüller quotes Rabbi Eliezer as saying, that the leaves, seed, and stem of dill were subject to tithe, so that we have reason for inferring that Mint would be also tithed. That our Saviour's words did not imply any disapproval of attention to these minor duties is evident from those which followed: "These," said our blessed Lord, "ought ye to have done, and not to leave the other undone." The whole passage, however, certainly proves that Mint was in general culture in Palestine as a garden herb; and though it is exceedingly difficult, if not impossible, to tell the exact species of Mint valued by the Jews, especially as several of the species are very nearly allied to each other, yet the *Mentha sylvestris*, our Common Horse Mint, and the *Mentha sativa*, are probably the kinds referred to. The latter species, which by some botanists is called *M. arvensis*, is very widely diffused, and occurs in Greece, in parts of Caucasus, in the Altai range, and as far as Cashmere. Dr. Royle says that the Horse Mint (*M. sylvestris*) is the most common species in Syria, and observes that it was found by Russell at Aleppo, and mentioned by him as one of the herbs cultivated in the gardens there. It also occurs in Greece, Taurus, the Altai range, and Cashmere. This author quotes passages from Celsus and Pliny, proving the high estimate of Mint among the ancient Jews. He remarks also that Dioscorides mentions it as useful to the stomach, and peculiarly grateful as a condiment. Mint was employed by the ancients in the preparation of many dishes. One very old use of Mint is still retained in Holstein, in Germany, where, when the peasants lay the remains of their departed friends in the tomb, Mint is carried by youths attending the funeral.

It is not unlikely that in former days more species were in common culture in this country, where now the Spearmint and Peppermint are the two plants chiefly selected. Our fathers had also their Crosse Mint, Browne.

Mint, Mackerel Mint, Curled Mint, Holy Blackish Mint, Heart Mint, Red Mint, Fish Mint, and Brook Mint, besides some which, like Horse Mint, are yet known by their old English names. The Spearmint, as well as many other species, is doubtless a powerful carminative, and the medical preparations made from it are much more agreeable than those obtained from the Peppermint, though they are not perhaps so useful. It contains much essential oil, and affords, as well as the oil, the spirit and water of mint, besides that a conserve is prepared from the herb. The conserve is very agreeable to those who like the flavour of Mint, and the distilled waters, both simple and spirituous, are agreeable to many persons, and are useful in many forms of suffering. Large quantities of Mint for the use of the druggist are grown in the neighbourhood of Mitcham, in Surrey. For more than a hundred years past many of the culinary, medicinal, and perfumery plants have been sent up to the London market from this neighbourhood. Hundreds of acres are covered with sweet and fragrant plants, diffusing at the season of their maturity the most delicious odours. These flowery fields are not, however, so lovely to the eye as an imaginative reader might suppose, for the plants, cultivated for use and not for show, are mostly arranged in formal rows, and are often of very low growth. Here and there a field of roses or of lavender may tint the landscape with brightened hues, and, like the humbler masses of Mint and Peppermint, give long and pleasant notice of their neighbourhood by the odours which are wafted by the summer breeze. Coltsfoot, poppy, wormwood, aniseed, chamomile, deadly nightshade, liquorice, horehound, and other plants used by the physician, the perfumer, or the maker of liqueurs, are cultivated there; and it is said that the owner of a large chamomile garden sometimes pays as much as a hundred pounds in a week to the women and children who are employed to gather in these medicinal flowers.

When used for medicinal purposes, the Spearmint is cut just when the flowers appear, and the herb-garden is then a very busy scene, as it is also some days after, when the plant is in full flower, as that is the season for gathering in Mint when it is required for the essential oil, and in both cases it must be cut while the weather is dry. The south of Europe affords the chief produce of perfumery herbs, and Grasse and Nice are the especial seats of the art, affording as they do, by their geographical position, within short distances, such changes of soil and climate as are desirable for the growth of various scented plants. Thus, the grower at Nice can plant his cassia on the sea-coast, fearless of those winter frosts which, in our climate, would in one night destroy all the results of his industry. Nearer the Alps the climate is well adapted for the culture of his violets, which yield a better odour there than if reared in those warmer spots which suit so well the orange-flower and mignonette. But it is to the English gardener that the druggist and perfumer look for their Mint, Peppermint, and lavender; and the essential oils obtained from these herbs, when grown at Mitcham, obtain a much larger price than those of the sunnier climes of France or Southern Europe, and have a sweeter and more delicate odour. It has been remarked, as a general observation, that though the flowers of warm climates have usually a more powerful odour, yet the more delicate fragrance is afforded by the plants of

1. PEPPER MINT.
   Mentha piperita.
2. WATER CAPITATE M.
   M. aquatica.
3. MARSH WHORLED M.
   M. sativa.
4. CORN M.
   M. arvensis.
5. NARROW LEAVED M.
   M. pratensis.
6. PENNY ROYAL.
   M. pulegium.

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moderately warm regions. But, as in all lands the great Creator has given beauty to flowers, so to some among them He has in every clime granted sweet odours.

Some idea of the value of odoriferous plants, as an article of commerce, is gained from the statement lately made in a popular journal. It mentions that one of the large perfumers of Grasse in France employs annually 80,000 lbs. of orange blossoms, 60,000 of cassia flowers, 54,000 of violet flowers, 20,000 of tuberose, 16,000 of lilac flowers, besides Mint, rosemary, lavender, thyme, orange, and other sweet-scented plants. It would be difficult to compute the amount of Mint and Peppermint grown in this country, but the wholesale druggists, and not the perfumers, are, in this kingdom at least, the great consumers of these two plants. In consequence of the great improvements of chemical science, it has, of late years, been found possible to imitate the scents usually procured from odoriferous herbs. Lord Playfair, in a lecture to the Society of Arts, observes :—"Perfumers, if they do not occupy whole streets, as they did in ancient Capua, show more science in attaining their perfumes than those of former times. The Jury of the Great Exhibition, or rather two distinguished chemists of that Jury, Dr. Hoffman and M. Delarue, ascertained that some of the most delicate perfumes were made by chemical artifice, and not, as of old, by distilling them from flowers. The perfumes of flowers often consist of oils and ethers which the chemist can compound artificially in his own laboratory. Singularly enough, they are generally derived from substances of intensely disgusting odour. A peculiarly fetid oil, termed fusel-oil, is formed in making brandy and whisky." From this fusel-oil and various chemical preparations, Lord Playfair adds, is obtained the oil of apples and the oil of pears, while the oil of pine-apple, now largely employed in making pine-apple ale, is procured from the action of putrid cheese on sugar. Oil of grapes and oil of cognac, used to impart the flavour of French cognac to British brandy, are little else than fusel-oil; and the artificial oil of almonds, so largely employed in perfumery, is prepared by the action of nitric acid on the fetid oils of gas-tar. "Many a fair forehead," the lecturer remarked, "is damped with *eau de millefleurs* without knowing that its essential ingredients are derived from the most disgusting sources. All these," says Dr. Playfair, "are direct modern applications of science to an industrial purpose, and imply an acquaintance with the highest investigations of organic chemistry. Let us recollect that the oil of lemons, turpentine, oil of juniper, oil of roses, oil of copaiba, oil of rosemary, and many other oils, are identical in composition; and it is not difficult to conceive that perfumery may derive still further aid from chemistry."

4. **Peppermint** (*M. piperita*).—Leaves stalked, egg-shaped, and lanceolate or oblong, serrated, upper leaves smaller; bracts lanceolate; flowers in loose, short, blunt spikes, interrupted below; calyx with awl-shaped teeth, quite smooth at the base, often red; perennial. A variety, often known as *M. officinalis*, occurs with broad and rounded leaves, heart-shaped at the base, and with its flowers in very long spikes. The Peppermint appears to be a truly wild plant on some of the riversides and moist places where it is found, but has probably escaped from cultivation. It is often

planted for its essential oil, which is used in lozenges and other confectionery, and so largely employed for medicinal purposes. Its stem and leaves are nearly smooth, and the spikes of purplish-lilac flowers appear in August and September. Its scent is much stronger than that of the Spearmint. Its essential oil exists in minute glands on the calyx and leaves, which are usually apparent to the naked eye. Nyman is of opinion that it exists nowhere as an indigenous plant, and many regard it as a mere cultivated form of *M. aquatica.*

5. **Water Capitate Mint** (*M. aquática*).—Leaves stalked, egg-shaped, serrated, rounded or slightly heart-shaped below, uppermost leaves like bracts, and shorter than the flowers; flowers at the summit of the stem in dense whorls, the highest forming a head, and sometimes also growing in axillary remote whorls; calyx tubular; perennial. Several varieties of this Mint occur, in one of which the leaves are cut, toothed, and crisped; while in another the leaves, calyx, and flower-stalks, are quite smooth. We have often thought, when, in August and September, we have seen the rounded heads of pale bluish-lilac flowers of this Mint peeping up from among the shallow waters, or clustering on some little islet of the stream, that it far outrivals most of its family in beauty. Its flowers are of a bluer tint than any other species; its leaves are downy, and in wet places, where it luxuriates, it often forms large masses one or two feet high. It is the commonest of all the Mints, and were it not for its strong and unpleasant odour, would be a good addition to the wild-flower nosegay of autumn. This odour, however, has its uses, for Dr. Johnston tells us, in his "Flora of Berwick-on-Tweed," that Mr. Macdonald of Scalpa in the Hebrides, having had much injury done to his wheat by the depredations of mice, gathered a quantity of this plant from a neighbouring brook, and placed it among his wheatsheaves, after which they remained untouched by these animals. He then put the Mint with cheese and other articles, then in store, which had formerly been much injured by mice, and found the plan successful, the Mint, both in its fresh and dry states, effectually repelling the intruders. There are several varietal forms of this species, distinguished in most cases by the amount of hairiness or downiness of the leaves.

* * *Flowers in axillary, distant whorls.*

6. **Marsh Whorled Mint** (*M. sativa*).—Leaves stalked, egg-shaped or elliptical, serrated, upper ones similar but smaller, all longer than the whorls, whorls all distant, dense; calyx with lanceolate sharply-pointed teeth. This plant is subject to great changes, being in various forms more or less hairy. The authors of the "British Flora" remark of the Mints in general:—"Nearly all the species are hairy, with serrated leaves, but are subject to two principal variations, viz. to be almost entirely smooth, in which case the flower-stalks and lower part of the calyx become quite smooth, and the odour of the species is milder and even pleasant; and to have the leaves cut and crisped. This latter is more strictly a monstrosity, and is sometimes accompanied with a considerable change in the inflorescence." The Marsh Whorled Mint grows on the banks of rivers or moist hedge-banks, and in copses. It has distant whorls of numerous reddish-lilac flowers, which

expand in July and August. This species, which runs into a considerable number of sub-species and varieties, is regarded by some as itself but a mere varietal form of *M. aquatica*, differing in bearing the whorls in the axils instead of in terminal spikes.

7. **Corn Mint** (*M. arvénsis*).—Leaves stalked, egg-shaped or elliptical, sometimes heart-shaped at the base, serrated, upper leaves similar, and equally large; calyx bell-shaped, in some varieties downy, in others smooth, having triangular acute teeth, about as broad as long; perennial. This very variable species is nearly allied to the last, its most marked difference being in the form of its calyx-teeth. The wanderer in the corn-fields at that pleasant season in which the labourer is gathering in his harvest, is very likely to see this Mint cut down by the scythe, or to find it at a later season springing up among the stubble. It is one of the commonest species of Mint. The stem is from six inches to a foot in height, and it has whorls of small lilac flowers in August and September. The smell is, in the ordinary form of the plant, powerfully unpleasant, and has been not unaptly compared to that of decayed cheese. It has carminative properties, and has sometimes been employed as a stomachic medicine. Its stem is more or less branched, and is, in some of its varieties, much tinged with red, in others bright green, and some of these are of a mild and pleasant odour. This is one of the plants that have flowers of two forms: a larger containing both stamens and pistil, and a smaller containing pistil only.

8. **Narrow-leaved Mint** (*M. praténsis*).—Leaves nearly sessile, egg-shaped, lanceolate, acute and serrated, upper ones similar, all longer than the whorls; calyx bell-shaped, glandular, lower part smooth; teeth triangular; perennial. This is a very rare plant of marshy places. Its stem and leaves are usually smooth, and the latter are paler on the under surface, and glandular. The flowers grow in August and September in distant, almost globular, whorls. Some writers doubt if the species is indigenous, as its only record is in the year 1789, when Sole found it in the New Forest; even then it appears to have been only a form of *M. sativa*.

9. **Penny-royal** (*M. pulégium*).—Flowers whorled; leaves egg-shaped, downy, blunt, slightly serrated; stem prostrate; flower stalks and calyx downy, the mouth of the latter closed with hairs; perennial. This species is very unlike the others, and is readily known by its prostrate stem; it is also smaller than our other wild kinds of Mint. It is a common plant near streams or bogs, and has a most powerful odour, which some persons think agreeable. Its purple flowers appear in June and July, the uppermost axils of the leaves being usually empty. It is frequently planted on the little plot of the cottage-garden—

> "The thyme strong-scented 'neath one's feet,
> The marjoram beds so doubly sweet,
> And Penny-royal's creeping twine,
> These, each succeeding each, are thine."

It is still deemed a useful medicinal herb, and an exaggerated idea of its properties probably won for it its epithet of Royal. The French also term it *Pouliot royal*. A tea made from its leaves is an old village remedy for colds and coughs, and all the old simplers describe it as "good and whole-

some for the lungs," while Gerarde said that a garland of the plant worn about the head would "cure giddiness." The leaves of this herb often curve downwards, and are sometimes covered with short hairs. The whole plant is pungent, with a slight flavour of camphor, and its odour, especially when bruised, is very powerful. Parkinson says of this herb: "It used to be put in puddings and such like meates of all sortes, and therefore in divers places they call it Pudding-grasse. The former age of our great-grandfathers had all these hot hearbes in much and familiar use, both for their meates and medicines, and therewith preserved themselves in long life and much health; but this delicate age of ours, which is not pleased with anything almost, be it meat or medicine, that is not pleasant to the palate, doth wholly refuse these almost, and therefore cannot be partakers of the benefit of them."

Many writers have believed the Penny-royal to be the Dictamne of the ancients. Virgil told how the deer ate of the plant, and were cured of the wounds inflicted by the huntsmen's arrows, a legend often alluded to by our own poets. Thus Stirling, in his "Aurora," says:

> "And whilst I wander, like the wounded deer,
> That seeks for Dictamne to recure his scarre."

4. Thyme (*Thymus*).

Wild Thyme (*T. serpýllum*).—Flowers in heads or whorled; stems prostrate, branched, hairy; leaves flat, egg-shaped, blunt, more or less fringed at the base, stalked; floral leaves similar; upper lip of the corolla notched; perennial. Those who love to wander over breezy hills, where the sheep are scattered far and wide about the landscape, well know the Wild Thyme. During July and August, many an open, lonely tract of our country is purpled over with its flowers, which are bringing fragrance to wide-spread heath, or grassy moorland, or sunny bank, or chalky sea-cliff, and forming aromatic cushions on which the rambler may repose to listen to murmuring bees and low whispering airs. Often as we have gone over such hills on some Sabbath morning, summoned by the welcome bell to the House of Prayer, we have, as we looked on the flock, been reminded of the shepherd's boy whom Graham describes as watching his sheep, on the thymy hills of Scotland:—

> "Nor yet less pleasing at the Heavenly Throne
> The Sabbath service of the shepherd boy,
> In some lone glen where every sound is lull'd
> To slumber, save the tinkling of the rill,
> Or bleat of lamb, or falcon's hovering cry;
> Stretch'd on the sward he reads of Jesse's son,
> Or sheds a tear o'er him to Egypt sold,
> And wonders why he weeps; the volume closed,
> With Thyme-sprig laid between the leaves, he sings
> The sacred lays, his weekly lesson, conn'd
> With meikle care, beneath the lowly roof
> Where humble lore is learnt.
> Thus reading, hymning, all alone, unseen,
> The shepherd boy the Sabbath holy keeps."

So refreshing is the perfume of the Thyme, that we wonder not that the old Greeks gave to the plant a name expressive of strength or courage, in the belief that it renewed the spirits both of man and animals, though they

1. WILD THYME.
   Thymus serpyllum.
2. MARJORUM.
   Origanum vulgare.
3. WOOD GERMANDER.
   Teucrium scorodonia.
4. WATER G.
   T. scordium.
5. WALL G.
   T. chamædrys.

certainly ascribed to the slightly tonic and stimulating properties of the herb a higher praise than they deserved. Thyme tea is yet in good favour in villages, and many a tuft of the closely allied garden Thyme is still to be seen on the cottage plot, and is gathered for that purpose. Often, too, perhaps, it is looked upon by some moralizing matron, to whom it is significant of the mingled weal and woe of daily life, as she remembers the old proverb, "Rue and thyme grow baithe in a garden." The plant was, in the opinion of our fathers, "a noble strengthener of the lungs, as notable a one as grows;" and in some of the earliest manuscripts of this country it was recommended for those who were "streyt ondyd," that is, short-breathed.

Besides its use as an infusion, and in various liquid preparations, an ointment was made from Thyme blossoms which was considered very healing. The leaves bruised, and laid upon the part stung by a bee or wasp, were thought to allay the irritation. Parkinson says of this herb: "Thyme is a speciall helpe to melancholicke and spleneticke disease. The oyle that is chymically drawne out of ordinarie Thyme is used, as the whole herbe is, in pils for the head and stomacke. It is also much used for the tooth-ache, as many other such-like hot oyles are." The substance now sold as a remedy for tooth-ache by the name of Oil of Thyme is made, however, from the marjoram. Mr. Purton, whose medical, as well as botanical science renders him a good authority in such matters, considers an infusion of the leaves of wild Thyme good for headache, and says it is reputed to be an infallible cure for nightmare; and Linnæus recommended its use for pains in the head. The plant yields camphor by distillation, and an infusion of its leaves may probably be taken with advantage by nervous persons. Bees are very fond of its flowers, and these are very pretty, in their deep purple tint, varying to pale lilac, and clustering amid their chocolate-coloured floral leaves. The plant is common on dry places in most European countries, and it forms a thick turf on some of the fields of Iceland, among which the whortleberries, bearberries, and cranberries flourish in abundance; while with its frequent companion, the marjoram, it grows on the Himalayan Mountains of India, at the height of 8,200 feet above the sea. The Germans call this plant *Thimian;* the French *Thym;* the Dutch, *Gemeene thym;* the Italians, *Teino;* the Spanish, *Tomillo;* the Poles, *Tym*, and the Danes, *Timian.* The old French writers term it *Pouliot-thym*, and *Pillolet*, and it was formerly called in this country, Puliall Mountaine, Pella Mountaine and had besides the names of Running Thyme, Creeping Thyme, Mother of Thyme, and Shepherd's Thyme. Its leaves laid near the resorts of mice are said to drive these animals from the place.

Old writers, both in prose and verse, tell how sheep are improved by feeding upon Thyme; but the fact is that these animals, except by accident, or when driven by hunger, leave untouched the aromatic herbs supposed to be so beneficial to them, and no doubt these strong odours may always be regarded as developed by the plant in order to protect it from the attacks of browsing animals. But the Thyme grows on downs and commons where the air is pure and bracing and the pasturage sweet; and sheep seem to have been destined rather for hilly and mountainous, than for lowland pastures and turnip-fields, though they can be accommodated to the latter conditions.

The wild Thyme varies much in different situations, not only in the degree of hairiness of its stems and leaves, but also as to size and odour. Sometimes, instead of the dark-green glossy foliage, we find specimens with leaves white with down, and occasionally the flowers are white. When growing on dry, exposed situations it is small and prostrate, but when beneath the shelter of furze or broom it has a stalk a foot or more high.

Mr. Babington has expressed his opinion that two species of Thyme are included in that described as *serpyllum;* one is *T. chamædrys*, the other the true *T. serpyllum*, but as the difference is chiefly in their habit of growth, they require to be examined while growing. He remarks: "In *T. serpyllum* there is a difference between the flowering shoot and that intended to extend the plant. Quite prostrate and rooting shoots are produced each year, which grow from the end of the shoots of the preceding year, and do not flower; also there spring from the other axils of these old prostrate parts of the plant short, erect, or ascending shoots, which form a linear series, and each of which terminates in a capitate spike, consisting of a very few whorls, and which die back to the base after the seed has fallen. The growing shoot is perennial, but the flowering shoot is annual. In *T. chamædrys* there is no such manifest separation between the flowering and young shoots. The terminal bud often produces the strongest shoot, which itself ends in flowers, differing thus from the terminal shoot of *T. serpyllum*, which always ends in a flowerless shoot. It wants the regularity of *T. serpyllum*, and presents a dense irregular mass of leafy shoots and flowers intermixed." Sir J. D. Hooker regards *T. chamædrys* as a sub-species of *T. serpyllum.*

The garden Thyme (*T. vulgaris*) is a native of Southern Europe; it is largely cultivated in herb gardens for the London market. It has the same qualities as the wild Thyme, yielding camphor in distillation with water. It is in Spain infused in the pickle used to preserve olives, and before the introduction of Oriental spices entered largely into the cookery of all European countries.

5. MARJORAM (*Origanum*).

Common Marjoram (*O. vulgare*).—Leaves stalked, broadly egg-shaped, blunt, sometimes slightly toothed; bracts egg-shaped, longer than the calyx; flowers in crowded panicles; perennial. Our hilly, chalky districts, bright as they are with the many flowers which thrive on their soil, would yet lose much of their autumnal beauty if they were deprived of their masses of Marjoram—

"The Marjoram sweet in shepherd's posies bound."

On dry, sunny hedge-banks, on towering cliffs, enlivening the road-side for miles together, the handsome and fragrant flowers are very common, and, as we see them on some rounded hill, we remember how both in this and other lands they are blooming at such elevations as to deserve their pretty and expressive name, "Joy of the Mountain." All about Dover the flower is most plentiful—so plentiful that when we find Shakspere making the words "Sweet Marjoram" the passwords between King Lear and Edgar, we feel how likely the walk towards the cliffs would be to suggest it. Near the

conspicuous cliff which yet bears the name of the poet, samphire and Marioram still bloom within sight of

"The dread summit of that chalky bourn ;"

and many a panting man climbs "to the top of that same hill, that horrible steep," and says now what Edgar is represented as saying then—

"Hark ! do you hear the sea ?"

Village people often gather, during autumn, large quantities of Marjoram, some of which is used while fresh for herb tea, while some is tied up in bunches, and hung to dry for winter service. The infusion is very grateful and refreshing, and doubtless is wholesome, though its efficacy in preserving health may be somewhat overrated by country people. In some parts of Northern Europe the plant is collected to put into ale, which it not only preserves from becoming sour, but also renders more intoxicating. The juice of this herb is highly stimulating, and is useful to allay rheumatic pains, as well as toothache. It is also very properly applied to sprains and bruises, and is said to be a good remedy for the falling off of the hair, an opinion which is most probably correct, as it possesses some of the same properties as the rosemary, a most useful plant for that purpose. The dried leaves are used in fomentations to allay pain. Both flowers and leaves are aromatic, and their odour seems to have been much valued in former years. Parkinson says: "The sweete Marjeromes are not only much used to please the outward senses in nosegaies, and in the windowes of houses, as also in swete powders, swete begs, and swete washing waters, but are also of much use in physicke, to comfort the outward members and parts of the bodie, and the inward also."

The essential oil of this plant is, when undiluted, so acrid that it may almost be termed caustic. It is secreted in abundance in the leaves and stems, and is the cause of its fragrance. Professor Burnett remarks : "Fee observes that odoriferous plants exhibit three remarkable variations; in some, the aromatic principle is free, and then it is dissipated by drying : this occurs chiefly in flowers such as the tuberose and jessamine, and it is not communicable either to water or spirit, and seems to be artificially retained only by the aid of fixed oils ; while occasionally, as in the lily and narcissus, it cannot be retained at all. In some, the aromatic principle is in union with, or is peculiar to, the essential oil with which the utricles or cryptæ are replete ; and in this form it is miscible with water and alcohol, but scarcely with fixed oils. In others, again, it is in combination with a resin, or gum-resin, and then it may be collected in concrete masses by wounding the plants, or if by distillation it deposits camphor after standing for some time. The fragrance of the Labiatæ is dependent on an essential oil, or odoriferous principle, of the latter kind, and their oil is remarkable for the quantity of camphor it contains." The camphor yielded by our wild Marjoram and thyme has caused the juice of these plants to be frequently used as an ingredient of various compositions intended to avert infection.

The Marjoram bears its flowers in roundish crowded clusters. They are purple, with floral leaves tinged with something of the same hue, but usually

darker, almost chocolate coloured. They expand in July and August. It will be noted, as in the case of thyme, that there are two forms of flower: the larger and more purple ones being complete, whilst the smaller and paler ones bear pistils only. The plant is sometimes called Wild Organy. The French term it *Marjoraine;* the Germans, *Majoram;* the Dutch, *Mariolein;* the Italians, *Maggiorana;* the Spanish, *Mejorana.* The Oregon territory of the United States is said to have derived its name from the abundance of Marjoram found there.

6. GERMANDER (*Teúcrium*).

1. **Wood Germander,** or **Wood Sage** (*T. scorodónia*).—Leaves heart-shaped, oblong, stalked, wrinkled, crenate, downy; floral leaves small; flowers in lateral and terminal one-sided racemes; upper lip of the calyx undivided, egg-shaped, lower with four teeth; perennial. When walking in woods, during July and August, we often find large masses of this Wood Sage; for it is a social plant, and we rarely meet with a solitary specimen. It grows also on banks, by roadsides, on dry heaths among bushes, on cliffs by the sea, and in copses. The erect stem of the plant is one or two feet in height, and its wrinkled and strongly-veined leaves are somewhat like those of the Sage, but of a more yellowish-green. The flowers grow in a one-sided cluster. They are of a yellowish-green colour, sometimes having a faint tinge of purple, and the stamens are pinkish-purple. We often pass by this plant with little notice, but our fathers regarded it with great interest; for they considered its bitter juices very medicinal, and it is not unlikely that they used the Ambrosia, as they called it, as we know they used some other labiate plants, in brewing ale. Mr. Curtis, referring to Jersey, says, "When cider, the common beverage of the island, has failed, I have known the people each to malt his barley at home, and instead of hops use to very good purpose, the Ambrosie of their hedges." The beer is said soone to become clear by the use of this plant; but Dr. Withering remarks that it gives the liquor too dark a colour. Of all our native bitters, this has certainly most resemblance to the flavour of the hop, and he who should taste either leaf or flower would immediately be reminded of that plant.

The flowers have an interest unknown to our forefathers: they act in a manner that would be regarded as intelligent in the case of animals. In order to secure cross-fertilization, the stamens successively hold themselves forward where their pollen must be brushed off by bees that seek the honey; and during this period the pistil looks over the back wall of the flower. But when the last anther has discharged, a change takes place—the fading stamens retire to the back, whilst the pistil with its ripe stigmas comes forward and occupies their former position, and receives the pollen brought from other plants. This plant is often called Garlic Sage, because, when bruised, it has a slight odour of garlic; and it is said that if cows feed upon it, it communicates the flavour of that plant to their milk. It is, however, rarely touched by these animals, though readily eaten by sheep and goats. Our fathers had a variety of names for this plant. It was called *Ambrosia salgia, Ache champestre,* and *Wylde sawge;* and Cotgrave describes it as "the herbe called oke of Cappadocia."

2. **Water Germander** (*T. scórdium*).—Stem procumbent below; leaves sessile, oblong, either narrowed or broad, and heart-shaped below, toothed, green on both sides; floral leaves similar; flowers whorled, axillary, distant, 2—6 in a whorl; calyx-teeth equal; perennial. This is a rare species, occasionally occurring in low wet meadows, chiefly in the Eastern counties. It is about half a foot in height, and bears rose-purple flowers, in distant whorls, during July and August. It is more or less hairy according to its situation, and has, like the last species, an odour of garlic. It was formerly used medicinally, and supposed to be useful against infectious diseases.

3. **Wall Germander** (*T. chamædrys*).—Leaves egg-shaped, cut, and serrated, wedge-shaped, and entire at the base, green on both sides; floral leaves smaller, nearly entire, whorls of 2—6 flowers; calyx-teeth lanceolate, nearly equal; perennial. This species has a much-branched stem, of which the lower part is woody, and it bears, in July, large and handsome purple flowers, marked with darker lines, generally about three together in the axils of the upper leaves. It is found near old ruins, and occasionally on field-borders; but it is a rare plant. It is plentiful on the city walls of Norwich, and occurs also on Winchester Castle. It is probably not a truly wild plant, but an escape from the garden. It was formerly called Ground Oak. The French term the plant *Germandrée*, which is an evident corruption of the old name *Gamandrée*, under which name it first appeared in a very rare Herbal of Mayence, printed in 1485.

4. **Annual Germander** (*T. bótrys*).—Stem ascending; leaves 3-cleft, or pinnatifid, with oblong, entire or cut segments, green on both sides; floral leaves similar, whorls axillary, 4—6 flowered; calyx inflated at the base, teeth lanceolate, equal; annual. This plant is very rare, and is a doubtful native. Its central stem is erect, with ascending branches, and it has numerous pale purple flowers. It has been found near Box Hill, Surrey.

7. Bugle (*Ajuga*).

1. **Common Bugle** (*A. réptans*).—Stem erect, with creeping scions at the base; lower leaves egg-shaped, or inversely egg-shaped, either cut or quite entire, tapering into a footstalk, all smooth, or slightly downy; perennial. This pretty flower is very common in moist woods, hedges, and pastures, during May and June. It has a solitary tapering flowering stem, from six to nine inches in height, from the base of which the creeping scions extend over the grass: they are a foot or more in length. The flowers grow in dense whorls, which are crowded closely together so as to form a spike, and their colour varies from deep purplish-blue to pale lilac or white, while the floral leaves are of darker purple than the blossoms. The plant is scentless and tasteless, and a slight degree of astringency seems to be its only virtue; but it was highly extolled by old writers as a remedy for pulmonary affections, and was greatly praised as an application for wounds. It was called Middle Comfrey, Consolida minor, Bugula, Brown Bugle, Sicklewort, and Carpenter's Herb. The French call it *Bugle*; the Germans, *Günsel*; the Dutch, *Senegroen*; and the Italians, *Bugola*; and a very old French name for this plant is *Herbe de St. Laurent*. There is a variety (*pséudo-alpina*) without scions, and with the lower floral leaves lobed. This mountainous Bugle is

very rare. It has been reported from Castleton in Derbyshire, and some other spots in England. Some botanists describe this as the Alpine Bugle (*A. alpina*); but it appears probable that a variety of *A. reptans* without stolons has been mistaken for the *A. alpina* of Linnæus, and there is no reason for believing that the latter has occurred here.

2. **Pyramidal Bugle** (*A. pyramidális*).—Stem solitary, without scions; leaves oblong, entire, or crenate, root-leaves tapering at the base, stem-leaves sessile, upper ones longer than the flowers; flowers whorled, forming a four-sided pyramidal spike; perennial. This is a very rare Highland plant, but is plentiful at the Burn of Killigower, and on the Ord of Caithness; it also occurs in Westmoreland. Its stem is from four to six inches high, and its flowers, which expand in May and June, are bluish-purple. The whole plant is sometimes hairy.

3. **Ground Pine** or **Yellow Bugle** (*A. chamæpitys*).—Stem much branched, spreading; leaves deeply 3-cleft, segments linear and entire; floral leaves similar, longer than the flowers; flowers solitary and axillary; annual. This plant is well called Ground Pine, as its narrow leaves look like a tuft of foliage taken from the pine-tree, only that their colour, instead of being dark, is of sea-green hue, and the yellow flowers, spotted with red, are almost hidden among them. This species differs altogether in its general appearance from the others of the genus. Its stem is about three or four inches high, reddish-purple, and glutinous; and the whole plant is somewhat hairy. It is in flower from May to September. It is by no means a common plant, but it is plentiful on sandy and chalky fields in some counties, as Bedford, Cambridge, Essex, Hants, Herts, Kent, and Surrey. Our fathers called it by the name of Herb Ivy, though for what reason is not apparent. It was also called Field Cypresse, and both English and German writers of Queen Elizabeth's time called it Forget-me-not. The plant contains a slight amount of tannin, and was believed formerly to afford a very useful medicine for gout. Charles V. is said to have been cured of that malady by drinking a vinous infusion made of the herb; "at least," observes Professor Burnett, "he got better after he had taken the medicine for sixty successive days; which, as a rare example of patience and explicit obedience to medical authority, deserves to be recorded."

8. Horehound (*Ballóta*).

Black Horehound (*B. nígra*).—Leaves egg-shaped, serrated; bracts linear, awl-shaped; teeth of the calyx pointed, spreading, longer than the tube of the corolla; perennial. A variety of this plant, in which the calyx-tube is shorter and stouter, the teeth short, suddenly pointed, tipped with a spine, keeled and turning downward, is, by some writers, described as *B. fœtida;* while another, having the calyx-tube narrow, elongated, and widely spreading upwards, with awned, egg-shaped, erect and spreading teeth, is described as *B. ruderalis.* Large quantities of the Black Horehound might be gathered from almost any hedge or road-side, often covered with the dust of the road, and never having any brightness, either of leaf or blossom. The foliage is wrinkled, of a grey green, and the numerous whorls of flowers, which from June to October invest the upper portion of the stem,

1. COMMON BUGLE
   Ajuga reptans
2. PYRAMIDAL B.
   A. pyramidalis
3. FALSE ALPINE B.
   A. reptans, var. pseudo-alpina
4. YELLOW B.
   A. chamaepitys

are of a dull faded-looking purple hue. The stem is two or three feet in height, and the whole plant has a very disagreeable odour. It is not often seen in woods and hedges, far away from houses; but there are few English villages or towns, except in Scotland and Ireland, in or near which we might not find it. It is one of those plants which follow man, and besides being pretty general all over Europe, it is to be found in Australia wherever the English colonist has come, and the Horehound raises its tall stem by many of the sheep-stations of that country. The French call it *Ballote*, the Germans *Zahnlose*, the Dutch *Ballote*, and the Italians *Marrobio*. The Swedes think it a remedy in almost every disease to which cattle are liable.

9. Motherwort (*Leonúrus*).

Motherwort (*L. cardíaca*). — Leaves stalked, lower ones palmate, 5-cleft and toothed, upper ones lanceolate and wedge-shaped, 3-lobed, the uppermost almost entire; perennial. This plant, though found in hedges and on waste places in several parts of England, is neither common nor indigenous. It occurs in Scotland and Ireland occasionally. It is easily distinguished from any other plant of the Labiate order by the palmate form of its lower leaves. Its foliage is of dull green, and the branched stem about three feet in height. The flowers expand in August, and form thick whorls of purplish-pink, or sometimes white, hairy blossoms, with a downy upper lip. Its name of *cardiaca* was given because the plant was formerly supposed to cure, not alone heart-burn, but the mental malady figuratively called heart-ache. It is slightly astringent, and has been used in Russia as a remedy for canine diseases. It has a very bitter and disagreeable flavour, and an unpleasant odour. The French call the plant *L'Agripaume*, and it is the *Hartgespan* of the Dutch, the *Herzgespann* of the Germans, and the *Agripalme* of the Italians and Spanish. An old herbalist says of it:—"There is no better herb to drive away melancholy; and against vapours, to strengthen the heart and make a merrie blythe soul, than this herbe; therefore the Latins called it *Cardiaca*. It may be kept in syrup or conserve." The seeds of this plant are numerous, and are round and black.

10. Hemp-nettle (*Galeópsis*).

1. **Red Hemp-nettle** (*G. ládanum*).—Stem either smooth or covered with soft down, not swollen below the joints; leaves lanceolate, slightly serrated, rather small, stalked, downy on both sides; calyx having sometimes a few glands; upper lip of the corolla slightly notched; annual. This plant is not unfrequent in gravelly and sandy fields, having, in August and September, purple flowers, mottled with crimson and white, and shaggy externally. It often grows on limestone rubbish, and a variety of the plant with narrow, almost entire leaves has been found at Southampton, among the shingle of the beach; this is by some regarded as a sub-species under the name *G. angustifolia*. The stem is nearly a foot high, with opposite branches.

2. **Downy Hemp-nettle** (*G. ochroleúca*).—Stem downy with soft hairs, not thickened at the joints; leaves egg-shaped, lanceolate, serrated, soft and downy on both sides, upper leaves egg-shaped; calyx glandular, shaggy with

closely-pressed hairs, with a few gland-tipped hairs intermixed; upper lip of the corolla slightly notched; annual. This rare plant, the stem of which is from ten to twelve inches high, bears its large pale yellow flowers in July and August. It has been found in sandy cornfields in Yorkshire, Durham, Lincoln, Notts, and Essex, and also in Carnarvon. Also known as *G. dubia.* It is not a true native.

3. **Common Hemp-nettle** (*G. tetrahit*).—Stem bristly, swollen below the joints; leaves egg-shaped, pointed, serrated and bristly; calyx teeth twice as long as the tube; corolla with the tube as long as the calyx, upper lip egg-shaped, erect; annual. This is a common plant in cornfields, just about the season when the wheat is ripening. In some fields, especially where the soil is of chalk or gravel, the flower may be seen ornamenting the short stubble long after the gleaners have carried away the scattered ears, and blooming on till the winds of November are fast scattering leaf and blossom. It also occurs sometimes in woods. It is an erect slender plant about two feet high, with opposite spreading branches, having numerous whorls of flowers, variegated with bright but pale purple and yellow, sometimes of a white tint, delicately tinged with purple. The whorls of flowers are remarkable for the long sharp teeth of their calyxes, and the stems are very much swollen beneath each pair of leaves. Dr. George Johnston tells us in his "Flora of Berwick," that labourers in the harvest-field are sometimes affected with a severe inflammation of the hand or of a finger, which they uniformly attribute to the sting of a Dog-nettle, the name by which this plant is known among them. "On examining its bristles," says this writer, "we perceive that they consist of three or four tubular joints, and arise from a swollen base or vesicle. On the upper part of the branches, on the calyxes and flowers, they are intermixed with others tipped with a gland. Now the former seem fitted by their structure for containing and emitting a fluid; and though in general too soft to wound, yet by chance, when rudely pressed, they may perforate the skin, and lodge their contents, which must be virulently poisonous, if the opinion of the cause of the disease be correct." It is not, however, impossible that the inflammation suffered by reapers may be caused by the Stinking Chamomile (*Anthemis cotula*). The author of these pages could never excite any irritation on the skin by handling the Hemp-nettle, though *A. cotula* readily causes irritation. All persons are not, however, similarly affected by the same plants, and she has known the hands of some inflamed by the yarrow (*Achillea millefolium*), though on her own skin it failed to produce any effect.

Our British species of Hemp-nettle do not appear to possess any medicinal virtues, but the *G. grandiflora* is thought by physicians to have been very serviceable in pulmonary complaints. The French call these plants *Galeope*, the Germans *Taube nessel*; the Dutch *Knoopige hondsnetel.* The latter term this and several plants of the Dead-nettle kind *Ortica morta.*

4. **Large-flowered Hemp-nettle** (*G. versicolor*). — Stem bristly, swollen below the joints; leaves oblong, egg-shaped, pointed, bristly and serrated; calyx-teeth shorter than the tube; corolla with the tube much longer than the calyx, upper lip horizontal and inflated; annual. This species appears in a printed description to be very similar to the last, yet it is quite

1 BLACK HOREHOUND
Ballota nigra

2 MOTHERWORT
Leonurus cardiaca

3 RED HEMP NETTLE
Galeopsis ladanum

4 DOWNY H N
G ochroleuca

5 COMMON H N
G tetrahit

6 LARGE FLOWERED H N
G versicolor

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different when seen growing in the corn-field. It is a common plant in the Scottish corn-lands, but very local in England. It is a larger, coarser-looking herb than the common Hemp-nettle, often two or three feet in height. The flowers expand in July and August, and are large and conspicuous, the yellow corolla having a broad purple spot on the lower lip. It is in Scotland called Bee-nettle. Sir Joseph Hooker regards it as a sub-species of the last, and calls it *G. speciosa*.

11. Weasel-snout (*Galeóbdolon*).

Yellow Weasel-snout, or Archangel (*G. lúteum*).—Leaves egg-shaped, pointed, stalked, and deeply serrated; flowers in whorls; perennial. We do not wonder that Gerarde disputed much whether this plant should not be included in the genus *Lamium*, where, indeed, Sir J. D. Hooker places it. It very much resembles the white Dead-nettle in form, and its blossoms are about the same size, and except in colour, very similar. It is usually, however, rather a taller and less erect plant, with narrower and more pointed leaves. The flowers, which in May and June grow in numerous whorls around the upper part of the stem, are bright yellow, more or less marked with patches of orange-red. The stem is about two feet high, and its leaves are often variegated with dashes of pale yellow. It is a local plant, but is very common in many shady woods in England, and may sometimes be seen in woodlands, where the trees have been cut down, growing in such abundance as to render some spots of a yellow hue. It is commonly called Yellow Archangel, and is *L'ortie morte des bois* of the French. The Germans call it *Gelbehanfnessel*, and the Dutch, *Geelbloemige hondsnetel*. It grows in many European countries, and is known in Norway, Sweden, Lapland, Germany, Switzerland, Austria, and Italy. Its properties are slightly astringent.

12. Dead-nettle (*Lámium*).

1. **White Dead-nettle** (*L. álbum*).—Leaves heart-shaped, pointed, deeply serrated and stalked; calyx-teeth long, awl-shaped, spreading; tube of the corolla curved upwards, the throat dilated, upper lip oblong, the side lobes of the lower one with 1—3 awl-shaped teeth; perennial. Everybody knows the White Dead-nettle, for it springs up by our pathway on sunny or shady bank or field-border in abundance, in May, and when the cold blasts of December are nipping most plants we find it still lingering beneath some hedge, its white blooms soiled and stained, and rent by wind and weather. Country boys make whistles of its square stalks, and bees gather honey from its flowers, but its odour is very disagreeable, and cattle will not eat it while any other herbage is within their reach. The flower is, in its common form, pure white, with black anthers; but we know a bank in Kent on which masses of the plant have grown, summer after summer, with very pretty rose-coloured blossoms, though not differing in any other respect from the common condition of the White Nettle. The stem is usually about a foot high, and the leaf sufficiently like that of the stinging-nettle to render many persons afraid to touch it. The stingless nature of the leaves, however, induced our fathers to call the plants of this genus not only Dead-nettles, but also Blind- or Dumb-nettles. In that old work, the "Promptorium par-

vulorum," or Anglo-Latin Dictionary, reprinted by the Camden Society, we find the archangel called *Deffe nettil.* The Editor, Mr. Albert Way, remarks of the adjective: "It is applied to that which has lost its germinating power: thus in the north, as well as in Devonshire, a rotten nut is called 'deaf,' and barren corn is called 'deaf-corn,' an expression literally Anglo-Saxon. An unproductive soil is likewise termed 'deaf.' The plant *Lamium*, or Archangel, known by the common names Dead or Blind Nettle, has the epithet 'deffe' evidently because it does not possess the stinging property of the true Nettle."

Linnæus says, that the leaves of the White Archangel are eaten in spring as a potherb. The French call the plant *L'ortie blanche.* The similar, but purple-flowered Dead-nettle, often cultivated in gardens, is not a variety of this, but an introduced species, *L. maculatum.*

2. **Red Dead-nettle** (*L. purpúreum*).—Leaves heart-shaped, crenate, all stalked, the upper ones crowded, the lower ones hanging downwards on long stalks; teeth of the calyx as long as the tube, always spreading; tube of the corolla straight, within, having a hairy ring, the throat much dilated; side lobes of the lower lip with two short teeth; annual. This plant is readily known by the reddish-purple tint of its floral leaves, and the silky hairiness with which the upper, and sometimes the lower leaves, also, are invested. It is truly a red nettle, and its whorls of reddish corollas are scarcely brighter than the purple-red leaves among which they grow. Large quantities of the plant may be found on most English hedgebanks, often forming masses there, as well as on the borders of meadow land, or in cornfields. It is in blossom throughout the summer, but we scarcely notice so dull and weed-like a plant when gayer blooms are expanding around us, though the lover of wild flowers looks upon it with favour in February or March, when it is almost the only blossom; or cherishes it in the latest nosegay which he can, in autumn, gather from lane or field. It usually grows to the height of a foot or a foot and a half. The author is informed by a friend that he has seen the roots of this plant boiled by cottagers for the food of pigs, and that it affords excellent nourishment for these animals. It was certainly used in this country in very early times for pottage. Pottage was by the old writers called "jowtes," or "joutes," and Gower speaks of Diogenes gathering joutes in his garden. Mr. Albert Way quotes from the Sloane MS. a list of plants for compounding joutes: "Cole, borage, persyl, plumtre leaves, redde nettil, crop, malves grene, rede briere croppes, avans, violet, and prymrol." These were to be ground in a mortar and boiled in broth. We fear that few modern palates would be gratified by the preparation.

3. **Cut-leaved Dead-nettle** (*L. incísum*).—Leaves broadly heart-shaped, deeply cut into teeth at the edges, all stalked, upper ones broadly egg-shaped and crowded, the uppermost being wedge-shaped at the base; calyx-teeth always spreading, and as long as the straight tube, which is without hairs within; annual. This species has its dull purple flowers from March till June. It is common on waste ground, and very difficult to distinguish from the last, with which some botanists unite it as a sub-species. Its stems are either few, slender, and elongated, or thick, short, and numerous.

1. YELLOW WEASEL SNOUT
   Galeobdolon luteum.
2. WHITE DEAD NETTLE.
   Lamium album.
3. RED. D. N.
   L. purpureum.
4. CUT LEAVED. D. N.
   L. incisum.
5. INTERMEDIATE. D. N.
   L. intermedium.
6. HENBIT. D. N.
   L. amplexicaule.

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4. **Intermediate Dead Red Nettle** (*L. intermédium*).—Leaves blunt, cut, and crenated, lower ones stalked and kidney-shaped, upper ones sessile, somewhat crowded; teeth of the calyx awl-shaped, longer than the tube, always spreading; tube of the corolla straight, naked within; side lobes of the lower lip with a short tooth; annual. The purplish-coloured flowers of this species expand from June to September. It is a dull-looking plant, about a foot high, its calyx usually tinged with purple. It is common on cultivated ground in Scotland and the north of England, but rare in Ireland. It is intermediate in character between *L. purpureum* and *L. amplexicaule*.

5. **Henbit Nettle** (*L. amplexicaule*).—Leaves roundish, heart-shaped, deeply and bluntly cut, upper sessile and clasping, lower stalked; calyx-teeth green, longer than their tube, erect after flowering; tube of the corolla straight, naked within; annual. This is a prettier species than any other of the purple-flowered Dead-nettles, for its corollas are of so much richer tint, being of a fine deep reddish-purple, on very long tubes. Early in the season the flowers are small, and do not expand, but yet they are fertile, and the fruit, consisting of four small nuts, is produced. The plant is about half a foot or a foot high; the stem is slender, and as it lengthens the floral leaves become somewhat distant. The leaves and stem are not so dull coloured as those of most of the species; they are rarely tinted with purple, and usually of a deep rich green hue.

13. Betony (*Betónica*).

Wood Betony (*B. officinális*).—Leaves oblong, heart-shaped, crenate; corolla twice as long as the calyx, middle lobe of the lower lip somewhat notched; perennial. The Betony is a much prettier and brighter plant than the Dead-nettles, and has one peculiarity in its mode of flowering which distinguishes it from most other labiate plants, as it bears what botanists term an interrupted spike. Its flowers appear in July and August, forming, on a slender stem about a foot high, whorls which for an inch or more are crowded closely together; then a piece of the green stalk appears, and below that portion there are again three or four whorls of flowers. The corollas are bright reddish-purple, and there are always two or three pairs of sessile leaves between the divisions of the spike; the lower leaves are all stalked. The plant has a slightly aromatic odour.

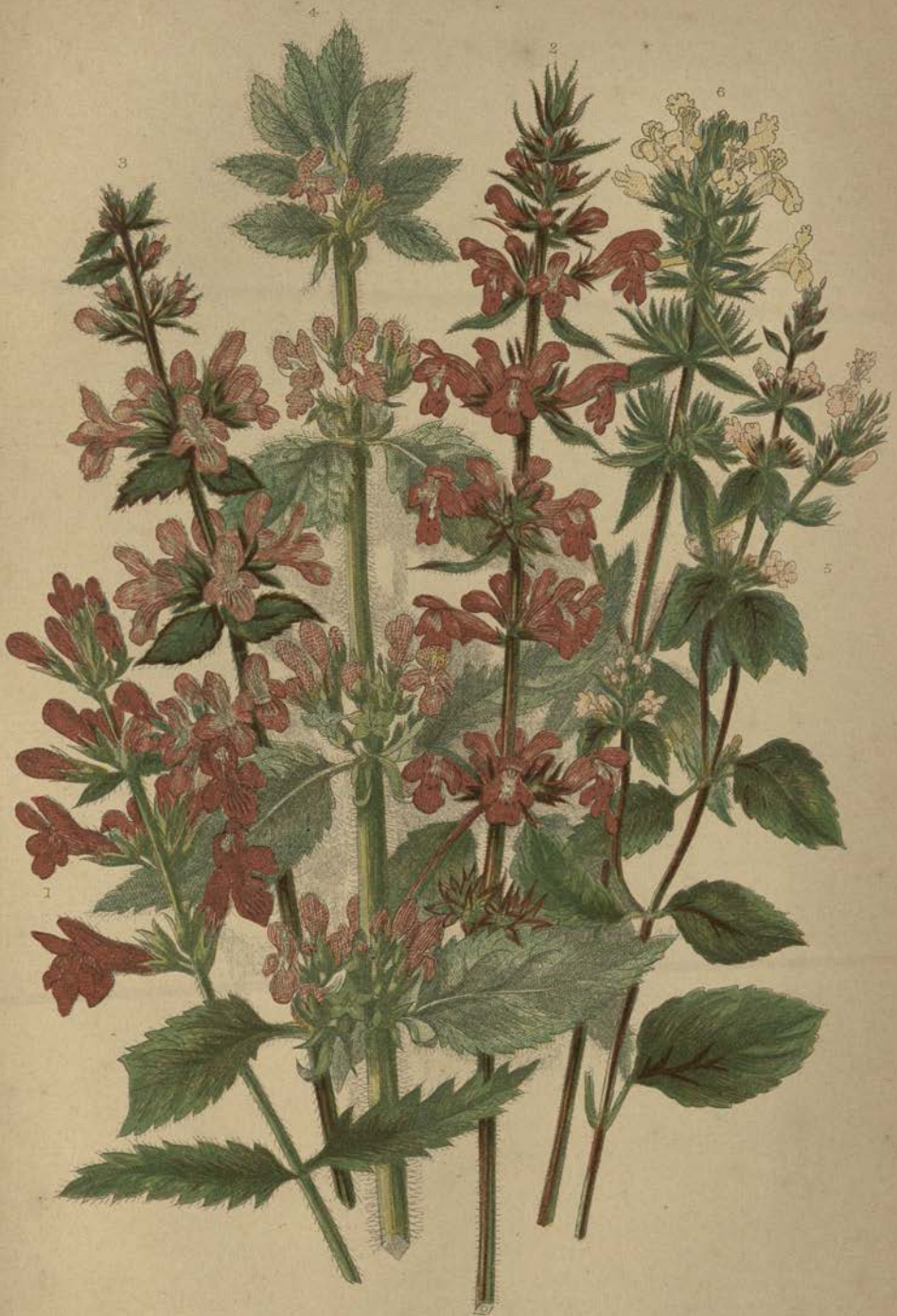
We have often seen in cottages in Kent, and doubtless there might be seen also in other counties, large bundles of the "medicinal Betony," as Clare calls it, hung up for winter use. An infusion of the plant is taken for colds and coughs, and its slightly tonic properties render it serviceable in low fevers. When used while fresh, the plant has an intoxicating property, which is removed by drying. It is not, perhaps, of any great worth as a medicine, and its rustic uses are doubtless remnants of usages introduced when the true properties of plants were less known. Of all the herbs praised both by British and Continental writers of the olden time, none, if we except the vervain, was more highly esteemed than this. Antonius Musa, the physician to the Emperor Augustus, wrote a whole book setting forth the excellences of the herb, which he said would cure forty-seven different disorders; while Franzius told how even the wild beasts of the forest knew its virtues, and

when wounded, availed themselves of its efficacy. Even now the proverbs are in common use in Italy which record its worth: "May you have more virtues than Betony," is sometimes the pious wish of a parting friend; and "Sell your coat, and buy Betony," is an old advice to the sufferer; while, every old English herbal abounds with its praises; and, in Scott's "Demonology and Witchcraft," the reader is told that "the house where *Herba Betonica* is sown is free from all mischief." The dried leaves, when powdered, excite sneezing, though this effect is probably only the result of the small hairs found on the leaves. In Bacon's "Natural History" we find that it had its uses on this account. He says: "We see sage and Betony bruised for sneezing-powder, or liquors, which the physitions call errhines." An infusion of the leaves for tea was very generally taken by those who were in delicate health; and Sir William Hooker says that the plant is cephalic. The roots are very bitter, and sheep are probably the only animals that will eat the plant, even the goat refusing it. The French call this herb *Betoine;* the Germans, *Betonika;* the Dutch, *Betonie,* and the Italians, *Betonico.* It grows commonly among bushes, and abounds in many of our woodlands. Bacon observes: "The putting forth of certain herbs discovereth of what nature the ground where they put forth is; as wild thyme showeth good feeding ground for cattle; Bettony and strawberries showeth grounds fit for wood; camomile showeth mellow grounds fit for wheat; mustard-seed growing after the plough, showeth a good strong ground, also for wheat; burnet showeth good meadow, and the like." Also known as *Stachys betonica.*

14. Woundwort (*Stáchys*).

1. **Hedge Woundwort** (*S. sylvática*).—Leaves egg-shaped and heart-shaped, acute, serrated, long-stalked; upper floral ones linear and entire; whorls of 6—8 flowers distant; calyx-teeth very acute; perennial. This branched hairy plant is common in woods and hedges. Its stem is two or three feet in height, and in July and August its whorls of flowers are numerous, though not close together. They are of a reddish-purple colour, often marked with white. This, as well as the other species, is very nearly allied to the plants of the last genus, the chief difference between the genera being the shorter tube of the corolla in the Woundworts. It has, especially when bruised, a strong and disagreeable scent. When the green portion of its stem is decayed, so strong a fibre has been left, that it has been suggested that the plant might be used for some of the same purposes as hemp or flax. It also furnishes a good yellow dye. Cattle leave it untouched. When in fruit, the calyx-teeth are remarkably rigid. The species were all formerly considered vulnerary plants. The French call the Woundwort *Stachyde;* the Germans, *Rossnessel;* the Dutch, *Andoorn;* the Italians, *Stachi;* the Spaniards, *Estaquis;* and the Portuguese, *Ortiga morta dos bosques.* It is commonly called Hedge-nettle in country places.

2. **Marsh Woundwort** (*S. palústris*).—Leaves linear-lanceolate, or egg-shaped and lanceolate, rounded or heart-shaped at the base, sessile or stalked; whorls of 6—10 flowers, bracts minute, calyx-teeth very acute; stem hollow; perennial. In one variety of this plant the lower leaves are shortly stalked, the upper sessile and somewhat clasping; in another, the



1. WOOD BETONY.
Betonica officinalis.
2. HEDGE WOUNDWURT.
Stachys sylvatica.
3. MARSH W.
S. palustris.
4. DOWNY W.
S. germanica.
5. CORN W.
S. arvensis.
6. PALE ANNUAL W.
S. annua.

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leaves have distinct stalks about half the length of the leaf. This Woundwort is very common on river banks and watery places, its widely-creeping roots spreading through the moist soil, and causing much inconvenience to the agriculturist; yet these roots might apparently be turned to good account. Lightfoot, in his "Flora Scotica," says, that in times of scarcity they have served for food, either when boiled or dried, and have been made into bread. Thick tuberous buds form upon the roots, and contain a tasteless farinaceous substance of a highly nutritive character. They are probably the only tubers of any labiate plant which could be used as esculents. Mr. Houlton, some years since, received from the Society of Arts a silver Ceres medal for introducing this plant to public notice, having previously cultivated it, and made various experiments on the root. The roots are dug up by swine from the low moist lands where they are abundant, and eagerly devoured. Gerarde praises the virtue of this plant in healing "grievous and mortal wounds." He says he derived his knowledge of its powers from a clown, who cured a wound with it in a week, which would have required forty days with balsam itself; hence he called the plant Clown's Woundwort.

3. **Downy Woundwort** (*S. germánica*). — Whorls many-flowered; leaves egg-shaped, with a heart-shaped base, crenate or serrate, stalked, densely covered with silky hairs; upper leaves lanceolate, acute, sessile; stem erect and woolly; calyx with erect teeth, silky; bracts as long as the calyx; biennial. This plant has been found very rarely in hedges and by road-sides in various parts of England, where the soil is of limestone, and is more common in Oxfordshire, Hants, and Kent, than elsewhere. The stems are about two feet high; the flowers, which are externally woolly, are of light purple, the palate striped with white. The plant is remarkable for its dense covering of silky hairs or wool. It flowers in September.

4. **Corn Woundwort** (*S. arvénsis*).—Flowers in a whorl; stem spreading; leaves egg-shaped, heart-shaped at the base, blunt, crenate; teeth of the calyx awned; corolla scarcely longer than the calyx; floral leaves sessile, acute; annual. This is a small plant, found more frequently than the farmer desires upon cultivated lands, though it is rare in Scotland. It is easily distinguished, not only from the other species, but from all other labiate plants, by its whorls of from four to six small light purple flowers, with the palate white, and spotted with purple, and by its lesser size and weak branched stems, as well as its small blunt leaves. It occurs on dry sandy and gravelly soils, flowering from July to September.

5. **Pale Annual Woundwort** (*S. ánnua*).—Whorls of from 4 to 6 flowers, forming a spike; leaves lanceolate, somewhat acute, broadly serrated, three-nerved, the lower ones stalked; floral leaves lanceolate, acute; calyx hairy, with awl-shaped teeth; tube of the corolla longer than the calyx; annual. This plant, which expands its yellowish flowers in August, is very rare. It was found by Mr. Woods in a field between Gadshill and Rochester; but it is an alien species introduced with seed from abroad. Its roundish nuts are glossy, and minutely rough.

6. **Alpine Woundwort** (*S. alpina*).—This south European species has recently been reported from Wotton-under-Edge, Gloucestershire, by Mr. Cedric Bucknall. The flowers are from 5 to 10 in a whorl; leaves oval,

heart-shaped at base, crenate, downy on both sides, the lower ones with long foot-stalks, the stalks of the lance-shaped stem-leaves gradually diminishing in length, uppermost sessile; calyx bell-shaped, with unequal spiny teeth, woolly without; corolla twice the length of calyx, purple, marked with white. This plant, which attains the height of two or three feet, is very variable, and may have been frequently overlooked as *S. sylvatica.*

15. Cat-mint, Ground Ivy (*Népeta*).

1. **Cat-mint** (*N. cátaria*).—Stems erect; flowers in dense, many-flowered whorls, on short stalks, and forming a spike; leaves heart-shaped, stalked, with tooth-like serratures, downy; perennial. This plant, though it can scarcely be called common, is not unfrequent in many counties of England; and in Kent, especially on the chalky soils, it sometimes grows in great plenty in the hedges. It is rare in Scotland, but occurs near Craig-Nethan Castle, and on a few other spots. The stem is two or three feet high, much branched; and, as well as the leaves, soft, and rendered so white by the down, as to have suggested the old English simile, "as white as Nep," which, Mr. Forby says, is still in common use in Norfolk. The whorls of flowers, which are to be seen from July to September, are very numerous, and the corollas are white, dotted with crimson. The powerful odour of the plant resembles that of the penny-royal. Cats are extravagantly fond of it; but it is remarkable that they will pass by the herb when growing in the hedge, as we have observed them to do, though, if brought into the house, they quickly discover it, and seem quite intoxicated by it. There is an old proverb respecting this herb—

> "If you set it, the cats will eat it;
> If you sow it, the cats won't know it."

John Ray tells us that the young plants which he removed from the fields into his garden were always destroyed by cats, unless he defended them by thorns placed around them till they had taken root and flowered, but he adds that these animals never touched those plants which had come up from seed. This must be accounted for on the principle that the odour is not perceptible to the cats until the plant is broken or bruised, as it is either by transplantation or by gathering. Mr. Miller mentions that he removed some of his plants of Cat-mint to another part of his garden within two feet of some which he had previously raised from seeds, but the former were all selected and destroyed, while the others remained untouched. No animal except the sheep will eat the Cat-mint on the pasture-land. It seems when gathered to have its influence on the cat only, as when laid beside the dog, or hung near the caged bird, it excites no attention.

This plant is in some places called Cat-nep, and our fathers termed it *Herba Catti*, or *Herba Cattaria.* The French call it *Chataire;* the Germans, *Nept;* the Dutch, *Katteruid;* the Italians, *Cattaria.* It is sometimes used medicinally, and the leaves of several foreign species are eaten in order to restore tone to the digestive organs. Commerçon states that a species common in Madagascar, which has tubercular roots, is a favourite vegetable; the roots are called *Houmines.* Hoffman relates that the root of our native Cat-mint, if chewed, will make the most gentle persons fierce and wrathful,

1. CAT MINT. Nepeta cataria.
2. GROUND IVY. N. glechoma.
3. WHITE HOREHOUND. Marrubium vulgare.
4. COMMON BASIL THYME. Calamintha acinos.
5. LESSER CALAMINT. C. nepeta.
6. COMMON C. C. officinalis.
7. WOOD C. C. sylvatica.
8. COMMON WILD BASIL. C. clinopodium.

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and adds that Turneiserius tells of a hangman who was usually gentle and pusillanimous, and who never had courage to perform the duties of his wretched vocation until he had first prepared himself by masticating this root. The writer of these pages, who, with a friend who joined in the experiment, chewed a piece of this bitter and aromatic substance, of the length of a finger, is able, however, to assure her readers, that for at least four-and-twenty hours after taking it, both she and her companion retained a perfect equanimity of temper and feeling.

2. **Ground Ivy** (*N. glechoma*). Leaves kidney-shaped, downy, crenate and stalked; stems creeping; flowers three together, in the axils of the leaves; root-stock perennial, and sending out long runners. In early spring, while flowers are few, we are more disposed to be observant of the forms of buds and leaves than in the later season:

"Though still so early one may spy,
And mark Spring's footsteps every hour:
The daisy with its golden eye,
And primrose bursting into flower;
And snugly, where the thorny bower
Keeps off the nipping frost and wind,
Excluding all but sun and shower,
The children early violets find."

Thus sang Clare of the country aspects of March; and besides these opening flowers, leaves of various form and hue are daily appearing among the grass. Sometimes even in the first month of the year, the young trailing shoots of the Ground Ivy creep in abundance on the bank among some older ones which have lived through the winter, and we should welcome this early herald of Spring, had we not faith in the proverb—

"If Janiveer calends be summerly gay,
'Twill be winterly weather till the calends of May;"

which, old as it is, is but a version of a Welsh proverb of higher antiquity, and the truth of which experience has confirmed. In March, however, be the spring early or late, we shall be sure to find the Ground Ivy leaves spread open on the sunny bank beside those of the creeping potentilla, and the green and glossy arum leaf. A very pleasant fragrance has our Ground Ivy, besides its slightly bitter and aromatic taste. In olden times the herb was in great request for tea, and we were accustomed in childhood to take it, as it is still occasionally drunk in villages, as a Spring drink. It is popularly believed to be tonic and invigorating, nor are we disposed to regard these diet drinks as altogether useless, while Mr. Abernethy could allude to these vegetable preparations in his work on the digestive organs, and consider them to have great efficacy. John Ray regarded this infusion of the Ground Ivy as good for the head-ache; and Professor Burnett says, that cases are on record in which it would appear that the plant has been really serviceable in hypochondriacal constitutions, and in mania. A pamphlet was published about twenty years since, stating its good effect in cases of mania; and we can add from experience, that an infusion of the leaves sweetened with sugar-candy, is an excellent medicine in cases of cough and cold. It is, at any rate, perfectly innocuous, and we can venture to recommend persons subject to pulmonary affections to dry the herb for winter use

as well as to take it while fresh. Our fathers considered it useful in a variety of maladies; and the plant was commonly sold in Queen Elizabeth's reign by the "herbe-women of Chepeside," under the names of Gill-by-the-ground, Hay-maid, Cats-foot, Ale-hoof, and Tun-hoof; and it was frequently put into beer instead of hops, or used to clear ale made with that plant. An old writer says, "It is good to tun up with new drink, for it will clarify it in any night that it will be the fitter to be drunk the next morning; for if any drink should be thick with removing, or any other accident, it will do the like in a few hours." It was customary also to drop the juice of Ground Ivy into the ear, to stay the singing tones which sometimes trouble the invalid; and it was also applied to the eyes to cure any temporary inflammation; but the beneficial results in both these cases were probably rather to be attributed to time, and the gradually restorative powers of Nature, than to the herb itself. Country farriers, however, still use the juice as an application to the eyes of horses, and all our old writers assure us that "it helpeth beasts as well as men."

In the ancient Anglo-Latin Dictionary referred to on a former page, we find "Hove, or Ground Yvy (herbe), *Edera terrestris.*" Mr. Way, commenting on this, says, that G. de Biblesworth mentions *eyre de bois e eyre terrestre* (heyhowe). He adds, "In John Anderne's 'Practica,' Sloane MS., the use of harhowe, vel halehoue, vel folfoyt, vel horshoue, in the composition of an unguent called *Salus populi*, is set forth. Langham, in the 'Garden of Health,' 1579, details the qualities of Ale-hoofe, Ground Ivie, Gilrumbith, Ground or Tudnoore; and Cotgrave gives Patte de Chat, Catsfoot, Ale-hoof, etc. Skinner thought that Ale-hoof was derived from all, and behofe, from its numerous medical properties; but the derivation of the name is probably from *hof ungula*, in allusion to the hoof-shaped leaf." Mr. Way adds, "that it is probable that the Read-hofe of the Anglo-Saxon herbals is the Ground Ivy, to which, however, the name *eoroifig* was assigned."

The flowers of the Ground Ivy expand in April and May, and are exceedingly pretty in their tints of rich purple, varied with the white anthers, which, growing in pairs, form a cross. The stems, creeping several feet among the grass, are often very troublesome on meadow lands, for the plant is rarely eaten by domestic animals, and is even thought to be injurious to them, while it impoverishes the pasture, and occupies soil which would nourish herbs of more worth to the owner of the meadow. Small galls are often found in this plant, which are made by a species of *Cynips*. They are sometimes eaten in France, but Réaumur justly doubted if they would "rank with good fruits."

16. White Horehound (*Marrúbium*).

Common White Horehound (*M. vulgáre*).—Stem erect, hoary; leaves egg-shaped and narrowed into a leaf-stalk, or roundish and heart-shaped, crenate, hoary and rugged; whorls many-flowered; calyx-teeth ten, awl-shaped; upper lip of the corolla 2-cleft; perennial. This is a bushy-looking plant, with stems one or two feet high, thickly covered with white woolly down, which also invests the wrinkled leaves, rendering them of a whitish-green hue. The foliage has an aromatic odour, and a bitter flavour,

and in August the flowers form close thick whorls around the stems. The blossoms are small and white, their calyx-teeth sharp and hooked. The Horehound, though not a very frequent plant, grows on waste grounds and waysides in many parts of England, but is more rare in Scotland and Ireland. It has for many centuries been used in disease, especially that of the lungs, and though not now employed by physicians, is thought by some good botanists to merit more attention from the faculty than it at present receives. An infusion of the leaves is a common remedy for coughs and colds, and candied Horehound and balsam of Horehound are still sold by druggists. The former is much in use for children, and the latter compound is said to be made of an infusion of Horehound and liquorice roots, with double the quantity of brandy. Horehound tea, sweetened with honey, is a safe remedy for coughs; and Dr. Thomson says, that it has been of decided service to consumptive persons. The plant loses its aromatic flavour if kept long.

Linnæus observes, that the word Marrubium is derived from an ancient Italian town called Maria-urbs, situated on the borders of the Fucine Lake The French term the plant *Marrube commun;* the Germans, *Weisse andorn* the Dutch, *Gemeene malrove;* the Italians, *Marrobio bianco.*

17. Calamint, Basil Thyme, Wild Basil (*Calamíntha*).

* *Whorls of six simple separate flower-stalks.*

1. **Common Basil** (*C. ácinos*). — Stem ascending, branched; leaves oblong, on short stalks, acute, serrated, or sometimes almost entire, more or less fringed at the base; annual. This is a very pretty little plant, often found on dry chalky hills or gravelly heaths, flowering in August; rare in Scotland and Ireland. It is about six or eight inches high, with whorls of small bright purple flowers, more or less marked with white on the lower lip. The tubular calyx is distinctly two-lipped, and the lower lip bulged at the base. The plant has a slight fragrance, resembling that of the thyme. It is often called Basil Thyme. The French call our pretty wild herb *Basilique sauvage;* the Germans, *Kleine bergmünze;* the Dutch, *Veld mynte;* and the Spaniards, *Albahaca menor.*

* * *Flowers in whorls of 2-forked cymes.*

2. **Lesser Calamint** (*C. népeta*).—Leaves egg-shaped, serrated, pale beneath, shortly stalked; calyx somewhat bell-shaped, obscurely 2-lipped; teeth nearly all of the same shape, and shortly fringed, the upper ones slightly shorter, the hairs in the throat protruded; flowers in forked many-flowered cymes; perennial. This is rather a rare species of Calamint, bearing its pale, pinkish-purple flowers on long stalks in July and August, and growing on dry banks in a chalky soil. It has a strong odour, like that of penny-royal, and much resembles the next species, of which some regard it as a sub-species, though it is smaller, and its leaves more strongly serrated. A good distinction, however, is found in the white hairs in the throat of its calyx. Both this and the next species were recommended by our forefathers to be burned or strewed in chambers, to drive away venomous serpents; and the "wholesome Calamint" is referred to by several of our old poets.

3. **Common Calamint** (*C. officinális*).—Leaves broadly egg-shaped, blunt, stalked, green on both sides, with rounded serratures at the margin; cymes stalked, few-flowered; calyx distinctly 2-lipped; teeth with a long fringe, those of the upper lip triangular, of the lower longer, and awl-shaped; hairs in the mouth not prominent; lobes of the lower lip of the corolla distant, middle one the longest; perennial. This is not an infrequent plant in dry places, on hedgebanks, and by waysides. It is erect and bushy, its stems and foliage of a pale greyish-green, and downy. Its flowers expand in July and August; they are numerous, of a pale pinkish colour, and have small pointed bracts in the forks of their stalks. The flavour and scent of the plant are aromatic, and the tea made by an infusion of the leaves is an old and not disagreeable medicine for colds and other maladies, while a compound syrup of Calamint is sold by druggists for the cure of coughs. The plant is sometimes called Calamint Balm, or Mountain Mint, and it is said of it, that if put upon meat which has been kept too long, it will remove all unpleasant odour and flavour. The French call it *Calement;* the Germans, *Kalamint;* the Dutch, *Berg-Kalaminth;* the Italians *Calaminta.*

4. **Wood Calamint** (*C. sylvática*).—Stem with ascending branches; leaves stalked, broadly egg-shaped, sharply serrated, green on both sides; flowers in forked cymes; calyx distinctly 2-lipped; teeth with a long fringe, those of the upper lip spreading or turning backwards, of the lower longer and awl-shaped; hairs in the mouth not prominent; lobes of the lower lip of the corolla with overlapping segments, all nearly equal in length; perennial. This plant bears large pale purple flowers from August to October, and its leaves are larger than those of the other species, though all the Calamints are very much alike. The root creeps slightly below the ground. This is a rare species, found among copse-wood in the Isle of Wight, and some parts of Hampshire and Devon. It is also regarded as a subspecies of *C. officinális.*

* * * *Flowers in dense axillary whorls; bracts forming a sort of involucre.*

5. **Wild Basil** (*C. vulgáris*).—Leaves egg-shaped, obtuse, rounded below, slightly crenate; whorls equal, many-flowered; bracts bristly, as long as the calyx; perennial. This plant was formerly called Unprofitable Basil, probably in contrast to the Sweet Basil of the garden, or Royal Basil, as it was termed. This is the *Ocymum basílicum,* and was thought to be the *Ocimum* so prized by the ancients, of which, however, we know little more than that Pliny said it throve best when sown with cursing and railing. Our Wild Basil is about a foot or a foot and a half in height. It is a straggling, hairy, not very attractive plant, having in July and August bristly whorls of stalked reddish-purple flowers, with numerous long pointed bracts. It occurs abundantly on dry banks, and in hedges, or other bushy places, in England, where we may often meet with a stray plant or two flowering long after the usual season, and cheering the December landscape; in Scotland and Ireland it is rare. It grows wild throughout Europe, from Sweden to Greece and Sicily, in Middle Asia, and also in some parts of North America, where, however, it is an introduced plant. The French call it *Le Clinopode,* and the Germans *Die Wirbeldoste.* It is the *Borstelkrans* of the Dutch, the *Clinopodio*

of the Italians, the *Albahaca silvestre* of the Spaniards, and is termed by the Russians *Bloschinza*. It is the *C. clinopodium* of Bentham.

18. Bastard Balm (*Melíttis*).

Bastard Balm (*M. melissophýllum*).—Leaves oblong, egg-shaped, or somewhat heart-shaped, serrated; upper lip of the calyx with 2 or 3 teeth; perennial. This is a very handsome but rare plant, found in woods in the south of England, as well as in Wales and Worcester. It is about a foot high, having very large leaves; and in June and July it bears either showy purple flowers with a creamy margin, or cream-white, blotched in different ways with purple. It has while fresh a disagreeable odour, but when dried its scent is pleasant, like that of new-made hay. The true balm belongs to another genus, and is the *Melissa officinalis*. The latter plant is sometimes included in the British Flora, as it is naturalized in the south of this kingdom. It has egg-shaped leaves, with rounded serratures, paler on their under surfaces; the white flowers spotted with rose grow in axillary one-sided whorls. It is a native of Southern Europe, and a very old inhabitant of the garden. Chaucer says, when referring to some delicious odour—

> "As men a pot-full of Baume held
> Emong a basket-full of roses."

19. Self-heal (*Prunélla*).

Common Self-heal (*P. vulgáris*).—Leaves stalked, oblong egg-shaped, blunt, upper lip nearly entire, or slightly toothed; upper lip of the calyx with short teeth, cut suddenly off, and tipped with a spine; flowers in whorls, forming a crowded spike; perennial. The Prunella, or Brunella, as our fathers called it, is very common on banks, and in moist or barren pastures. Its dense short spikes of flowers are usually of a deep purple colour, though we have seen them of a pale lilac, and even white tint. The lower lip of the corolla has a toothed margin, and at the base of the spike are two leaves, and two slender bracts are beneath each whorl, which, as well as the calyxes, are of deep purple. Like most of our labiate plants, it is in flower during July and August. Its old names of Carpenter's Herb, Sickle-wort, and Hookweed, as well as that by which it is still called, allude to its uses as a vulnerary; and many cases are recorded by old herbalists in which wounds inflicted by sickles, scythes, and other sharp instruments, were healed by its use. As it possesses some astringency, it was probably useful in such cases. The plant grows by waysides in most European countries. Sir Charles Lyell saw it in New England, where doubtless it had been introduced from Europe; and Sir Joseph Hooker saw it on the mountains of the Himalaya. Linnæus softened down the old name of Brunella to its modern appellation, but the former word is said to have been derived from the German *bräune*, the quinsy, from its supposed uses in that complaint. Its modern name is pretty nearly alike in all the countries of Europe. The French term it *Brunelle;* the Germans, *Prunelle;* the Dutch, *Bruinelle;* the Italians *Brunella;* and the Spaniards, *Brunela*.

20. SKULL-CAP (*Scutellária*).

1. **Common Skull-cap** (*S. galericulàta*).—Stem branched; leaves oblong or egg-shaped, and lanceolate, rounded or heart-shaped at the base; flowers axillary, opposite, all turning one way; calyx downy; perennial. This handsome plant is not unfrequent on the borders of rivers and ponds. Its stem is about a foot or a foot and a half high, and from June to September its pretty blue flowers are blooming. They are rather large for so small a plant, and the tube of the corolla is much longer than the calyx. As soon as the flowers fall off the upper lip of the calyx closes on the lower one, and gives to the seed-vessel the appearance of having a lid. One would wonder, at seeing the four little nuts at the bottom of this closed calyx, how they were to emerge from it, for the contrivance for their dispersion is not at first sight apparent. When, however, the little parchment-like box is well dried, it divides into two distinct portions, and the small seeds destined for the growth of future plants fall out, and are soon buried beneath the soil. It is one of the many marks of design which the thoughtful botanist discovers continually in his observation of the flowers of the field, and from which he gathers a remembrance of God's care and goodness. The Skull-cap received its name from the singular character of its calyx, which, when inverted, resembles a helmet with its visor raised, while in its ordinary state it is not unlike a cup or dish with a handle; hence its botanic name from *scutella*. It is also called Hooded Willow-herb. The French term the plant *La Toque*; the Germans call it *Schildkraut*; the Dutch *Helmkruid*; and the Italians, *Terzanaria*.

2. **Lesser Skull-cap** (*S. minor*).—Leaves shortly stalked, blunt, usually quite entire, lowest ones broadly egg-shaped, the intermediate ones egg-shaped, lanceolate, heart-shaped, and sometimes halberd-shaped, at the base, upper and floral ones lanceolate and rounded at the base; flowers solitary, axillary, and opposite; corolla with the throat dilated; calyx downy; perennial. This is a small bushy plant from four to six inches high. The lower leaves are often toothed at the base, and the small flowers, which expand in July and August, are of a dull pinkish-purple colour, almost white, with the lower lip spotted. The plant is not common, although pretty generally distributed.

Order LXIII. VERBENACEÆ—VERBENA TRIBE.

Calyx tubular, not falling off, corolla irregular, with a long tube; stamens 4, 2 longer than the others, rarely 2 only; ovary 2 or 4-celled; style 1; stigma 2-cleft; seeds 2 or 4, adhering to one another. This order is very nearly allied to the *Labiatæ*. It consists of trees, shrubs, and herbs, with opposite leaves, and flowers growing in spikes or heads. The species are rare in Europe, in Northern Asia, and North America; and in colder latitudes the plants are herbaceous, but are shrubs, or even large trees, in tropical regions, where the order is chiefly represented. Our gardens are enlivened by the bright flowers of many of the Verbenas, and the Lemon-plant has long been

1. BASTARD BALM.
   Melittis melissophyllum.
2. COMMON SELF HEAL.
   Prunella vulgaris.
3. COMMON SKULL CAP.
   Scutellaria galericulata.
4. LESSER S. C.
   S. minor.

a favourite because of its strongly fragrant leaves; this shrub is the *Verbena triphylla* of older botanists, but is now called *Aloysia citriodora*. Some of the plants of the order are used for remedial purposes, but few of them are remarkable either for their medicinal or economic uses.

VERVAIN (*Verbéna*).—Calyx 5-cleft; corolla unequally 5-cleft; stamens shorter than the tube of the corolla. Name, the Latin name of the plant.

VERVAIN (*Verbéna*).

Common Vervain (*V. officinális*).—Stamens 4; stem erect, 4-angled, somewhat rough; leaves shining above, rough beneath, lanceolate, cut and serrated, or 3-cleft with cut segments; spikes slender, somewhat panicled; bracts about half the length of the calyx; perennial. The Vervain is a very common plant in England, while in Ireland it is local, and in Scotland it is not a native. It is remarkable for growing in the neighbourhood of towns and villages, and is seldom, perhaps never, found at the distance of more than a mile from houses. It grows on barren grounds, on stony pastures, heaths, and sea-cliffs, and is a slender plant, branched above, with very few leaves, and with flowers which are remarkably small for the size of the herb. They are of a pale lilac colour, and form terminal slender spikes in July and August.

The interest excited in these days by the Verbenas is directed to the beautiful garden species, which are natives of America, and far handsomer than our wild plant in their showy clusters of pink, purple, white or dazzling scarlet blossoms. But few of our native plants derive a greater interest from old associations than our common Vervain. It rivals the Mistletoe in the number of ancient usages connected with it, and might, like that plant, serve to awaken in the thoughtful mind a thankful spirit for the clearer light revealed to men of modern days. As Gerarde, however, justly said, "Manie old wives' fables are written of vervayne tending to witchcraft and sorcerie, which you may read elsewhere, for I am not willing to trouble your eare with such trifles." The Druids regarded this herb with peculiar reverence, and Pliny relates how, in Gaul, they often used it in casting lots, telling fortunes, and foreshowing future national events, gathering it with peculiar ceremonies. It was to be sought for when the great Dog-star was just rising in the heavens, and when plucked, an offering of honeycomb was to be made to the Earth as a recompense for depriving her of so goodly a herb. The Romans, too, held it in high honour, and the ancients generally seem to have believed the notion recorded by Pliny, that if the hall or dining chamber be sprinkled with the water wherein Vervain lay steeped, all that sate at the table should be "very pleasant and make merry more jocundly." The Romans, who considered it a sacred plant, placed it in the hands of ambassadors who were about to enter on important embassies, and used it in sacrifice to their gods. Pliny tells us that the festival table of Jupiter was swept and cleansed with branches of the Vervain, with great solemnity, and the floors of houses were rubbed with it to drive away evil spirits. In our own country the plant was called Holy-herb, and was connected with several superstitious usages. To preserve its peculiar virtues certain forms had to be observed in gathering

it, such as making the sign of the cross with the hand and repeating this incantation :—

"Hallowed be thou, Vervain,
As thou growest on the ground,
For in the Mount of Calvary
There thou wast first found.
Thou healedst our Saviour Jesus Christ,
And staunchedst His bleeding wound ;
In the name of Father, Son and Holy Ghost,
I take thee from the ground !"

It was doubtless owing to the veneration in which the plant was held in ancient days, that it was in later ones believed to possess great medicinal virtues. Indeed, in several old directions for its use, we find intimations of a belief in its magical properties. Even of late years the author has seen a piece of Vervain root tied round the neck of a child as a charm to cure the ague, and was told that the plant required to be attached to a white satin ribbon in order to ensure its efficacy. But the herb was also described as a remedy in thirty different maladies; and the author can remember having, during childhood, seen a pamphlet wholly devoted to a description of the uses of the plant in various disorders, and prefaced by an engraving of the Vervain, though the herb does not appear to possess any real medicinal powers beyond a slight degree of astringency. We find Michael Drayton thus alluding to it :—

"Here holy Vervayne, and here dill,
'Gainst witchcraft much avayling ;'
Here horehound 'gaynst the mad dog's ill,
By biting, never failing."

We never find this plant omitted whenever the old poets wrote, as they often did in their verses, a list of the various herbs of power. Thus, Spenser says :—

"And then again he turneth to his play,
To spoil the pleasure of that paradise,
The wholesome sage, and lavender still grey,
Rank-smelling rue, and cummin good for eyes
The roses reigning in the pride of May,
Sharp isop, good for green wounds' remedies ;
Fair marygolds, and bees alluring thime,
Swete marjoram, and daisies decking prime.

Cool violets and orpine growing still,
Embathed balm, and cheerful galingale,
Fresh costmary and breathful camomil,
Dull poppy and drink-quickening setewale,
Vein-healing Verven, and head-purging dill,
Sound savory, and bazil, harty-hale,
Fat coleworts and comforting perseline,
Cold lettuce, and refreshing rosmarine."

No wonder that the Vervain had the expressive old name of Simpler's Joy. It was called also Juno's Herb, Mercurie's Moist Blood, Enchanter's Plant, and Pigeon's Grasse. The last name was given because, according to Gerarde, "Pigeons are delighted to be amongst it, and to eat thereof." It is called in France, *Vervene ;* in Germany, *Eisenkraut ;* in Holland, *Yzerhard ;* in Russia, *Scheelsnik ;* in Italy and Spain, *Verbena.*

1. COMMON VERVAIN. Verbena officinalis.
2. COMMON BUTTERWORT. Pinguicula vulgaris.
3. LARGE FLOWERED B. P. grandiflora.
4. ALPINE B. P. alpina.
5. PALE B. P. lusitanica.
6. GREATER BLADDERWORT. Utricularia vulgaris.
7. INTERMEDIATE B. U. intermedia.
8. LESSER B. U. minor.

Pl. 171.

Order LXIV. LENTIBULARIÆ—BUTTERWORT TRIBE.

Calyx divided, not falling off; corolla irregular, 2-lipped, spurred; stamens 2, sometimes 4, 2 long and 2 short; ovary 1-celled; style 1, very short; stigma 2-lipped, the lower lip smallest; capsule 1-celled, 2-valved, many-seeded. This order consists of small herbaceous plants, with leaves all from the root and undivided, or compound root-like leaves, with numerous small bladders or air-vessels. The species are natives of marshes, or rivulets, or fountains, in all parts of the world, especially in temperate and cold countries. They are not known to possess any important properties.

1. BUTTERWORT (*Pinguícula*).—Calyx 2-lipped, upper lip 3-cleft, lower 2-cleft; corolla gaping, spurred. Name from the Latin *pinguis*, fat, the leaves being greasy to the touch.

2. BLADDERWORT (*Utriculária*). — Calyx of 2 equal sepals; corolla personate, spurred. Name from the Latin *utriculus*, a little bladder.

1. BUTTERWORT (*Pinguícula*).

1. **Common Butterwort** (*P. vulgáris*).—Spur cylindrical and tapering nearly straight, shorter than the limb of the corolla; segments of the corolla very unequal, rounded and diverging from each other, and all entire; capsule egg-shaped and pointed; leaves all from the root; perennial. This singular and very beautiful plant, though rare in the southern and midland counties of England, is not unfrequent on the bogs and heaths in the north of the kingdom, and is common also in the countries of Northern Europe. The leaves, which are of a pale brownish-yellow colour, have their edges rolled in, and their surfaces so covered with minute crystalline points, that they look as if sprinkled with hoar-frost. These points are really glands from which the greasy fluid is poured out. The slender delicate stalks are three or four inches high, several springing from one root, and bearing each a bright blue flower in the month of June. The plant is called by the Laplanders *Tät-grass*, and the leaves are used by them in preparing a favourite beverage of milk, which they call *Taeotmioelk*. The fresh leaves of the Butterwort are laid upon a filter, and warm reindeer's milk is poured upon them, which, after passing through the filter, is allowed to remain for one or two days, till the milk becomes sour, when it is found not to have become separated from the whey, and yet to have acquired by this method a much greater tenacity and consistence. Nor is it necessary to gather fresh leaves in order to prepare another portion of milk; for Professor Lindley observes that a small quantity of this solid milk will act upon that which is fresh, in the manner of yeast. It is from these uses that the plant acquired the name of Butterwort, and the greasy surface of the leaves originated the French name of *Grassette*, and also that of *Pinguícula*. If these leaves are only laid in cow's milk, they readily coagulate it; and the Swedes and Norwegians use them much in their dairies. When crushed, they serve as a village remedy for bruises, and their unctuous nature renders their juices good for the skin, irritated by exposure to wind. In Wales, a pleasant syrup is prepared with this foliage.

The late Charles Darwin, having had his attention drawn to the numbers of dead insects frequently found adhering to the leaves, investigated the matter, and proved conclusively that Butterwort is an insectivorous plant. The edges of the leaf are rolled in towards the centre, and thus form a vessel capable of retaining fluids. Flies get stuck to the leaf, and their presence excites the glands to an increased flow of their secretion, which now becomes acid and capable of digesting their softer portions. The result is afterwards absorbed by the glands and utilized for the nourishment of the whole plant. All the species exhibit this insectivorous habit.

The Butterwort is sometimes called Yorkshire Sanicle, and is said to have been formerly used to dye the hair yellow. It is known in Germany as *Feltkraut;* in Holland as the *Smeerblow;* the Spaniards call it *Grassila;* and the Italians *Pinguicula.* It is very difficult of cultivation, but is occasionally planted in gardens, though the handsomer *P. grandiflora* is more easily reared, and better repays the cultivator.

2. **Large-flowered Butterwort** (*P. grandiflóra*).—Spur awl-shaped, cylindrical; segments of corolla very unequal; perennial. This is the most beautiful of all the native species. It grows on bogs in the counties of Cork and Kerry, in Ireland, bearing, in May and June, its flowers of deep but bright purple colour. It is a rare plant, and may be distinguished from the Common Butterwort by the broader lobes of the lower lip, and the notched tip of the spur. The leaves, both of this and the last species, die in winter, and buds are formed, which in the following spring expand into perfect plants. This is regarded by some as a sub-species of *P. vulgaris.*

3. **Alpine Butterwort** (*P. alpina*).—Spur conical, shorter than the limb of the corolla, and curved towards the lower lip; capsule acute; perennial. This species is much smaller than the Common Butterwort, which it resembles in habit, and in the texture of its foliage. Its flower-stalks are smooth, and its flowers, which expand in June, are yellowish-white, having clear yellow hairs beneath, and a very short spur. It is very rare, being found only in bogs in Scotland. The recorded localities of this flower are the Isle of Skye, and the bogs of Aughterflow and Shannon, in Ross-shire.

4. **Pale Butterwort** (*P. lusitánica*).—Spur cylindrical, blunt, curved downwards; segments of the corolla nearly equal; leaves and flower-stalks covered with short hairs; perennial. This plant is about the same size as the last, and though not nearly so rare, yet is very local, never occurring in the east of this kingdom, and rarely in the midland counties, but being chiefly confined to the marshy plains and moors at the west. It has been found on marshy ground near Basing, three miles from Basingstoke; and it is abundant in the Hebrides, and in the bogs of Ireland. The leaves are greenish-white, and veined; and the lilac flowers with yellow throats expand from July to September.

2. Bladderwort (*Utriculária*).

1. **Greater Bladderwort** (*U. vulgáris*).—Spur about half as long as the corolla, conical, straight and blunt; upper lip of the corolla about as long as the inflated palate; leaves pinnate, and much divided; anthers cohering; perennial. This is a not very common plant in ditches and deep

pools. It has an erect stalk, from four to six inches in height, and in June six or eight of the large bright yellow flowers grow from the upper part of the stalk, and several inches above the surface of the pool.

This plant is of great physiological interest, on account of the numerous air-bladders which invest it. The shoots or runners are submerged in the water, and are clothed at regular intervals with divided capillary leaves, armed with distant minute spines. Attached to the leaves and shoots are many little crested membranous bladders, of a green, purple, or pink colour. The bladders are of a most curious structure. Each has an aperture closing with an elastic valve, which Mr. Wilson has observed to be of a much thinner texture than the vesicle to which it is attached. It opens inwards, and this botanist remarks that aquatic insects often enter the orifice, and are, of course, confined there. All the species of Bladderwort have these little bladders on some part of their structure, and by their aid entrap large numbers of the small fresh-water crustaceans known as water-fleas, as well as the minute larvæ of water-beetles, etc. These are retained until drowned, and when their bodies decompose, the enriched fluid is absorbed by certain glands for the benefit of the plant. The French call the plant *L'Utriculaire;* the Germans, *Wasserlauch;* and the Dutch, *Neelekruide.* In Denmark it is termed *Vandröllike,* and in Norway *Vassröllike.* It is sometimes called in country places Hooded Milfoil. There is a rare sub-species, *U. neglecta,* with more slender stem, smaller leaves, the upper lip of the corolla exceeding the palate, and the spur more conical.

2. **Intermediate Bladderwort** (*U. intermédia*).—Spur conical; upper lip twice as long as the inflated palate; leaves 3-parted; segments linear and forked; perennial. This species is somewhat rare. It is altogether a smaller plant than the last, and its pale yellow flowers have a much shorter spur and a longer upper lip; they are also fewer in number, and the flowering stalk is not more than two or three inches high. The stems are more leafy, but the bladders are placed on branched stalks, and not on the foliage. Their season of bloom is July, but the plant seldom flowers, being mostly increased by buds. Mr. Borrer has observed, however, that at this period the vesicles are all immersed in the mud, and the leafy shoots float under water. The plant is found in ditches and pits, and has been recorded from the counties of Dorset, Hants, and Norfolk, and between Westmoreland and Sutherland, as well as in Ireland.

3. **Lesser Bladderwort** (*U. minor*).—Spur very short, blunt; upper lip as long as the palate; lower lip egg-shaped, flat; leaves much cut into forked segments, bladders upon the leaves; perennial. This is a plant growing in ditches and deep pools throughout the country. It is a smaller but rather stronger plant than either of the preceding, bearing from June to September small pale yellow flowers, with scarcely any spur.

Utricularia bremii, a species resembling *U. minor,* but of more robust habit and with more rounded lip, has been recorded from Moray and Nairn, in Scotland, but as the specimens observed were not in flower, it is not impossible that a mistake may have been made.

The Bladderworts can hardly be cultivated, but they grow wild in abundance in the pools and rivers of many countries, being often among the

loveliest of aquatic plants, with their pink, purple, yellow, or white flowers. The blossoms are so fragile that they scarcely survive the gathering; nor do they retain any of their beauty when dried, changing in the herbarium to a dark, almost black, hue.

Order LXV.—PRIMULACEÆ—PRIMROSE TRIBE.

Calyx 5-cleft, rarely 4-cleft, and in *Trientalis* 5—9-cleft, regular, not falling off; corolla of as many lobes as the calyx (wanting in *Glaux*); stamens equalling in number the lobes of the corolla, and opposite to them; ovary 1-celled; style 1; stigma capitate; capsule 1-celled, opening with valves; seeds numerous, attached to a central column. The order consists of herbaceous plants, chiefly inhabitants of the colder latitudes. It contributes to our fields and meadows some of the loveliest of wild-flowers, as it includes the Primrose, Cowslip, Pimpernel, and Water-violet; while to it the garden owes some of its earliest blossoms, as the Auricula, Polyanthus, and Cyclamen. The economical uses, however, of the species are of small importance, and somewhat of acridity exists in the roots of the Cyclamen and the flowers of the Pimpernel.

1. WATER-VIOLET (*Hottónia*).—Calyx 5-cleft, almost to the base; corolla salver-shaped, with a short tube; stamens 5; capsule opening with 5 teeth. Named after Professor Hotton, of Leyden.

2. PRIMROSE (*Prímula*).—Calyx tubular, 5-cleft; corolla salver or funnel shaped, with a long cylindrical tube; stamens 5, enclosed within the tube of the corolla; capsule 5-valved, with ten teeth. Name from the Latin *primus*, first, from its early bloom.

3. SOW-BREAD (*Cyclamen*).—Calyx bell-shaped, cleft half-way down into 5 segments; corolla wheel-shaped, the lobes reflexed; stamens 5; capsule opening with 5 teeth. Name from the Greek *kyklos*, a circle, from the spiral form of the fruit-stalks.

4. SEA MILKWORT (*Glaux*).—Calyx bell-shaped, coloured, of 1 piece, 5-lobed; corolla none; stamens 5; capsule 5-valved, with 5—10 seeds. Name in Greek denoting the sea-green colour of the leaves.

5. CHICKWEED WINTER-GREEN (*Trientális*).—Calyx 7-cleft to the base; corolla wheel-shaped; stamens 7; capsule opening with valves. Name of doubtful origin.

6. LOOSESTRIFE (*Lysimáchia*).—Calyx 5-cleft to the base; corolla wheel-shaped; stamens 5, not hairy; capsule opening by valves. Name said to be from King Lysimachus.

7. PIMPERNEL (*Anagállis*).—Calyx 5-cleft to the base; corolla wheel-shaped; stamens 5, hairy; capsule splitting all round. Name from *ana*, again, and *agallo*, to adorn, from its adorning the wayside every spring.

8. CHAFF-WEED (*Centúnculus*).—Calyx 5-cleft to the base; corolla with an inflated tube; stamens 4; capsule splitting all round. Name said to have been given anciently to the nearly-allied genus Pimpernel, and supposed to be derived from *cento*, patchwork, from the way in which it covers the ground.

9. BROOKWEED (*Sámolus*).—Calyx 5-cleft, adhering to the lower half of

the capsule, not falling off; corolla salver-shaped, with 5 scales at the mouth of the tube; stamens 5; capsule opening with 5 reflexed teeth. Supposed to be named from the island of Samos, where Valerandus in the 16th century gathered the species since called *Samolus valerandi*.

1. WATER-VIOLET (*Hottónia*).

Common Water-violet, or **Featherfoil** (*H. palústre*).—Flowers whorled, on a long cylindrical stalk; corolla longer than the calyx; leaves finely divided; perennial. This is a very lovely, though not a very common inhabitant of our English pools, and it is unknown in those of Scotland. Its pretty feathery leaves, which are all submerged, grow in tufts, only the upper part of the flower-stalk rising above the water. This stands up about four or five inches from its surface, and is surrounded in May and June by large handsome flowers of a lilac and yellow, or pale purple, or sometimes white, hue. The creeping root is composed of white, thread-like fibres, which penetrate deeply into the soft soil. The flowers produce honey, and are of two forms —one with a short style that just reaches to the mouth of the corolla-tube, around which stand the stamens; the other with the stamens inside the tube and the pistil projecting far out. Like wood-sorrel, henbit-nettle, and violet, this species also produces flowers that never open, but which, nevertheless, produce good seed. The seed-vessel, about the size of a pea, splits into five valves, but these remain connected at top and bottom.

2. PRIMROSE, OXLIP, COWSLIP (*Primula*).

1. **Common Primrose** (*P. vulgáris*).—Leaves oblong, egg-shaped, wrinkled, crenate; flowers in umbels, as throughout the genus, but in this case the flower-stalk is very short; calyx tubular, teeth lanceolate, tapering, very acute; limb of the corolla flat; perennial. One variety of the common Primrose has a stalked umbel of flowers, and this is the origin of the Polyanthus of our gardens; while some writers describe the inflorescence of the Common Primrose as a sessile umbel, because if each stalk bearing the solitary flower is traced to the base, all the stalks are seen to grow in an umbelliferous form. To none familiar with wood or garden need we descant on the beauty of the Primrose tufts, which are in spring among their loveliest ornaments. In April and May we may wander among the woods or by the hedge-banks secure of finding them, contrasting with the violet and other favourite flowers. But he who loves the woods at an earlier season—who is not scared by deep-sounding blasts, who can find a music in the voices of the winds and a grace in the motion of the leafless boughs—he may perchance discover, two or three months earlier, a Primrose-bud peeping up from amid the withered leaves which had sheltered it securely from nipping frosts. Such a rambler would probably bethink him of Milton's description, "The rathe Primrose," for though the old word "rathe" is hardly so significant in our days as in those of the poet, yet he is reminded that it is the origin of our common word "rather," or sooner, and feels how justly it alludes to the Primrose. Linnæus in the imaginative mood which so often characterized his nomenclature, termed these flowers the *Preciæ*. Our old writers called the species *Prymrole*, which, like our common name, seems to be a corruption of *Prima rosa*; and

the French *Primevère*, the Italian *Primá-vera*, the Spanish *Primula*, and the German *Frühlings-blume*, all tell how men have welcomed the early flower, welcomed it all the more because they could find it by vale or hill, by wood or river.

'The humble Primrose' bonnie face,
I meet it everywhere;
Where other flowers disdain to bloom,
It comes and nestles there;
Like God's own light—on every place,
In glory it doth fall,
And wheresoe'er its dwelling-place,
It straightway hallows all.

"Where'er the green-wing'd linnet sings,
The Primrose bloometh lone;
And love it wins, deep love from all,
Who gaze its sweetness on:
On field-paths narrow, and in woods,
We meet thee far and near;
Till thou becomest prized and loved,
As things familiar are."

Bacon, with that strange mixture of knowledge and ignorance which is to be found in his "Sylva Sylvarum," attempts to account for the early appearance of the spring flowers. "There be," he says, "some flowers, blossoms, grains, and fruits, which come early, and others which come more late in the year. The flowers that come early with us are Prime-roses, violets, anemonies, water-daffadillies, *crocus vernus*, and some early tulippas; and they are all cold plants, which therefore (as it should seem) have a quicker perception of the heat of the sun increasing, than the hot herbs have; as a cold hand will sooner find a little warmth than a hot. And those that come next after are wallflowers, cowslips, hyacinths, rosemary flowers, etc.; and after them pinks, roses, and flower de luces; and the latest are gilly-flowers, hollyocks, larksfoot, etc. The earliest blossoms are the blossoms of peaches, almonds, cornelians, and mezereons, and they are of such trees as have much moisture, either watery or oily; and therefore *crocus vernus* also being an herb that hath an oily juice, putteth forth early, for those also find the sun sooner than the drier trees." Notwithstanding this and similar opinions and disquisitions of the old writers, however, the cause is yet unknown why the Primrose is found amid the flowers of spring, and the rose is the glory of Midsummer, though we can all agree in the opinion of this writer as to the cause of the early bloom of the fruit-trees. "It," he says, "seemeth to be a work of Providence, that they blossom so soon, for otherwise they could not have the sun long enough to ripen."

The Rev. C. A. Johns remarks in his "Flowers of the Field," respecting the Primrose, "The colour of the flowers is such as to have a name of its own; artists maintain that primrose-colour is a delicate green." Our old writers, too, like Spenser, call it the "greene Primrose," and Parkinson treats of green Cowslips. He says: "And first of Primroses and Cowslips, whereof there are many prettye varieties, some better knowne in the west part of this kingdom, others in the north, than in any other, until of late being observed by some curious lovers of varieties, they have been planted diversely, and so made more common; for although we have had formerly in these parts about London greene Primroses usually, yet we never saw or heard of greene Cowslips, both single and double, but of late daies; and so likewise for Primroses too, both single and double, from one roote, and divers upon one stalke of divers fashions, I am sure is not usual: all which deserve better to be planted under some hedge or fence, and in the shade than sunshine." The "greene Cowslips" of this old writer were probably Oxlips.

1. WATER VIOLET
Hottonia palustris.
2. COMMON PRIMROSE
Primula vulgaris.
3. JACQUINS OXLIP.
P. elatior
4. COWSLIP
P. veris.
5. BIRDS EYE PRIMROSE
P. farinosa.
6. SCOTTISH P.
P. scotica.

Pl. 172.

Almost all our old poets refer to the Primrose. Spenser has some elegiac verses, in which he says—

"She is the rose, the glory of the day,
And mine the Primrose in the lowly shade."

And Shakspeare likened Fidele's face to the "pale Primrose." The Primrose is so common a wild flower, that all men know it. Well does it tell of England's soil to her distant sons; and Dr. Stephen Ward mentioned to the Royal Institution, as an instance of the successful conveyance of plants in glass cases, that a Primrose so transported had arrived in full bloom, and that when it reached Australia the sensation excited by it as a reminiscence of fatherland was so great, that it was necessary to protect it by a guard. Mrs. Abdy has written some interesting verses on this touching incident:—

"The strong and toiling man, intent on grasping worldly store,
Who from the hidden caves of earth wrests forth the precious ore,
Recalls with joy his childish glee when Primrose tufts he found,
And deem'd no richer treasures could be proffer'd by the ground.

"The gentle girl, contending with a rough and chequer'd lot,
Thinks of the glens and coppices around her father's cot,
From whence the early Primroses she oft rejoiced to bring,
Greeting their blooming promise as a herald of the spring.

"All love upon the English flower to rest their wearied eyes,
Reading therein a history of dear and sever'd ties,
Communion with their absent friends in fancy they attain,
And go refresh'd and solaced on their busy course again.

"A 'Primrose on the river's brim' hath won the poet's lays,
But surely thou, sweet Primrose, hast a higher claim to praise;
Thou in the vaunted realms of gold hast cheer'd an exile band,
And soothed their toil with pleasant thoughts of Home and Native Land!"

Lovely as our native Primroses are, they are not equal in beauty to those of the tribe which deck the mountains. This is pre-eminently an Alpine genus of plants; and far away on the heights of Switzerland and Spain, on Alps or Pyrenees, the Primroses peep up to remind the traveller of the English garden. Amid the cold blasts of some of these dreary regions, where ice and snow thicken during the winter over impassable chasms and inaccessible mountain peaks, the little Primrose is lying secure beneath the fleecy mantle, and waiting for some gleam of sunshine to melt a small patch of snow, when it will smile forth upon the loneliness. Not merely the sulphur-coloured, but still more often Primroses of a white, yellow, violet, lilac, and sky-blue colour, expand there; and the purple auricula, with its white centre and powdery cup, sheds its peculiar perfume.

It is not on the lofty mountains of Europe only that the Primrose tribe grow in great profusion and beauty. Sir Joseph Hooker, when in the Himalayas, was often delighted with these flowers, which he saw growing with the saxifrages, tufted wormwood, whitlow-grass, and others, close to the snow, while grasses, and sedges, and green moss, were all around. In more fertile spots the rhododendrons took the most prominent place on the scene, clothing the mountain-slopes with a deep-green mantle, and glowing with bells of different colours, every bush being laden with flowers. Primroses came next, both in beauty and abundance, accompanied by Cowslips with

stalks of the wondrous height of three feet; and purple polyanthuses and pink dwarf Primroses nestled among the rocks; while one exquisite species, blue as sapphires, sparkled like these gems among the turf; then came gentians, and a large species of rhubarb, which waved its graceful pyramid of white flowers above them all.

But we are wandering far from the flower of our woodlands, which, with wrinkled leaves, opens with the budding trees. The leaf is very similar to that of the Cowslip, but the observer will perceive the difference between the two in the gradual narrowing of the Primrose leaf towards the base, while that of the Cowslip suddenly narrows just below the middle, forming a foot-stalk. The leaves of both flowers are agreeable to silkworms, and the roots possess an emetic property, and were of old much used medicinally. The blossoms are still in country places made into a pretty pale yellow ointment, which we have ourselves often applied to the wounds made by briars and thorns, but which probably owes its chief efficacy to some other of the various ingredients of which it is composed. The Auricula of our gardens (*P. auricula*), which grows in abundance on the Lower Alps of Switzerland, was in much repute among our old writers on plants. It was called Bear's-ears, and among other wonderful cures effected by it, it received much praise for its use in curing diseases caused by having "inadvertently eaten the sea hare." This poor little harmless animal, so frequent on our shores, seems to have been held in the greatest dread, and even its touch deemed deleterious. How it could be "eaten inadvertently" is a marvel, but a large variety of plants are strongly recommended to be used against its various injuries.

Michael Drayton, describing the wedding-garlands of his day, enumerates several of this genus among many well-known flowers:—

> "To sort which flowers some sit; some making garlands were,
> The Primrose placing first, because that in the spring
> It is the first appears then only flourishing;
> The azured harebell next with them they neatly mix'd,
> To allay whose luscious smell they woodbind placed betwixt;
> Amongst those things of scent, then prick they in the lilly,
> And next to that again her sister daffadilly;
> To sort these flowers of show with the others that were sweet,
> The Cowslip then they couch, and the Oxlip for her meet:
> The columbine amongst, they sparingly do set,
> The yellow king-cup wrought in many a curious fret,
> And now and then among of eglantine a spray,
> By which again a course of lady-smocks they lay;
> The crow-flower, and thereby the clover-flower, they stick
> The daisy over all those sundry sweets so thick
> As Nature doth herself; to imitate her right,
> Who seems in that her part so greatly to delight,
> That every plain therewith she powdreth to behold;
> The crimson darnel-flower, the blue-bottle and gold,
> Which though esteem'd but weeds, yet for their dainty hues,
> And for their scent not ill, they for this purpose choose."

Many more flowers were added to the list; so many, that one is ready to pity the bride or her maidens, who must have been overloaded with these sweets. But spare your pity, gentle reader, for never did all these flowers bloom together at one season; a circumstance to which the older poets rarely paid the slightest attention in their narratives or allusions.

Our sulphur-coloured Primrose is found in most European countries, growing in woods, copses, and partially-shaded banks, thriving most luxuriantly on clay soils, but never occurring, like the Cowslip, in the midst of the meadow. Varieties, slightly tinted with red, often grow in our woods, but

"The polyanthus of unnumber'd dyes"

has been changed by culture to most of the various tints.

2. **Common Oxlip**, or **Jacquin's Oxlip** (*P. elátior*).—Leaves egg-shaped, contracted below, wrinkled, slightly toothed; stalks umbellate, many-flowered; calyx tubular, teeth lanceolate and acute; limb of corolla concave, segments oblong, heart-shaped; tube not contracted at the mouth, and without scales or folds; perennial. The Oxlip is not a generally-distributed flower, though varieties between the Primrose and Cowslip are often very similar, the chief difference in structure being that these varieties have more or less a slightly inflated calyx, and a somewhat contracted mouth, and folds and plaits in the throat. As this distinct species is rare, except in woods and meadows in the eastern counties of England, the common variety of the Primrose, the Primrose Oxlip, is evidently the flower mentioned by our poets, and this is not infrequent. Many of us may say with Shakspeare—

"I know a bank whereon the wild thyme blows,
Where Oxlip and the nodding violet grows."

The Oxlip is of the same colour as the Primrose, its calyx, however, being tubular, and not bell-shaped.

3. **Common Cowslip** (*P. véris*).—Leaves egg-shaped, contracted below the middle, crenate, toothed, and wrinkled; flowers in umbels, drooping; calyx tubular, and bell-shaped, teeth short; limb of the corolla concave; tube with a circle of scale-like folds at the slightly contracted mouth; perennial. Rare as the Cowslip is in the meads of Scotland, it is plentiful enough in the clayey pastures of England, affording to many a merry group of children a sweet wild nosegay, and an innocent source of pastime. Sometimes their hats are adorned with the flowers, sometimes these are by laborious ingenuity made up into cowslip-balls, or large numbers of the blossoms are gathered by poor women and children, and carried into towns for sale.

In some places the Cowslip is commonly called Paigle; we have heard it so called in Cambridgeshire, but never in Kent, but it is a very old English name of the flower, as is that of Petty Mullein. English herbalists commonly term it Palsy-wort; and *Herbe à paralysie* is a very ancient French name for the Cowslip; while the medical writers of old times, who made much use of these flowers, called them *Arthriticæ* and *Herbæ Paralysis*. In France the flower is now called *Primerole*, or it shares with others the familiar name of *Fleur de Coucou*. Our word Cowslip is of very old use, and is the Saxon *Cuslippe*, having probably a reference to the soft texture of the corolla, or to the odour, which might seem similar to that of the breath of cows. The blossom is usually of rich yellow, with five crimson spots round the mouth of the tube, and appears in April and May.

A decoction of the flowers was said by old medical writers not only to cure tremblings, but was believed to be generally efficacious in strengthening the brain and nerves, and the leaves were considered a useful application to

wounds. The flowers were, after being well dried in the sun, made into a conserve with sugar. An old writer, who says that this preserve was in great fashion in his time, in Sussex, gives lengthened directions for preparing it. The flowers are still in use in villages for making a cosmetic; and Parkinson says of their juice, that it is "commended to cleanse spots or marks on the face, whereof some gentlewomen have found good experience." Though the leaves have little flavour, they were described as serving well for a salad. The plant would probably afford all the benefits which Chaucer describes the maidens as bestowing :—

> "And after that of herbes that there grew
> They made, for blisters of the sun breuning,
> Ointments very good, wholsom, and trewe,
> Where that they yede the sick fast anointing,
> And after that they yede about gadering
> Pleasant salides, which they made them ete,
> For to refresh their gret unkindly heat."

The leaves undoubtedly possess sedative properties, though not to the same degree as those of the lettuce; and the root, when first drawn from the ground, has an odour of anise. Country people sometimes mix the blossoms with tea, considering them both wholesome and refreshing. Cowslip wine is not uncommon in Warwickshire, though it is not so frequently made in this country as it was by housewives half a century since. It is very pleasant in flavour, and an excellent sedative.

The Cowslip may be propagated by dividing the roots in autumn, and by culture very handsome clumps of this flower may be produced, of much larger size and richer hue than when growing wild. Old writers on gardens call some of the varieties thus produced Curled Cowslips and Galligaskins. They had, too, their feathered Cowslips, which were probably some kind of fringed polyanthus; their Red Bird's-eye Cowslips, Green Cowslips, Rose Cowslips, and Jackanapes on Horseback; while one unfortunate flower was called the Franticke or Foolish Cowslip. Cattle are not fond of Cowslips, nor, indeed, of any of the Primrose tribe, but swine eat them.

4. **Bird's-eye Primrose** (*P. farinósa*).—Leaves inversely egg-shaped and lanceolate, mealy, crenate; calyx oblong, egg-shaped, teeth linear; limb of corolla flat; segments inversely heart-shaped, rounded below, distant, as long as the tube; perennial. This is a most lovely little flower, something like a miniature auricula. It blooms in July, and is of a pale lilac, purple, or sometimes almost white, with a yellow centre. It is not unfrequent on the mountainous pastures of the north of England, though on some less elevated localities, long known to the botanist in Yorkshire, and other counties, it has been eradicated to make room for the railway. It is rarely found in Scotland. Sir Joseph Hooker mentions in his "Flora Antarctica," when referring to the Falkland Isles, that the heaths of grassy land were spotted with a white Primrose nearly identical with this flower, and hardly to be distinguished from it.

5. **Scottish Primrose** (*P. scótica*).—Leaves inversely egg-shaped and lanceolate, toothed, mealy; calyx bladder-like; limb of the corolla flat, its mouth glandular, the segments inversely heart-shaped, half the length of the tube; perennial. This is the loveliest of our native Primroses. It is

about half the size of the last species, stouter, shorter, and with smaller flowers, which are of a deep bluish-purple, with yellow centre. It is frequent in pastures on the north coast of Sutherland, at Caithness, and on the sandy shores of the Orkney Islands, flowering from June to September.

3. Sow-bread (*Cyclamen*).

Sow-bread (*C. hederæfólium*).—Leaves heart-shaped, angular, finely toothed, their ribs and footstalks somewhat rough; tube of the corolla globose; mouth with five teeth; perennial. This plant, though not indigenous to our soil, occurs in several places in profusion, as near Sandhurst and Goudhurst, in Kent. In July, its white or pink flowers, with their lobes turned backward, are nodding on long stalks; and even as late as September they are yet open on warm, wooded spots. The plant has a dark brown, tuberous, highly acrid root-stock; its leaves are, as their name would imply, shaped something like those of the ivy, and the flowers have a delicate perfume. As the fruit ripens, the flower-stalks twist spirally into numerous coils, inclosing the capsule in the centre, and this they gradually bury in the earth. The Sow-bread is a pretty flower, and would doubtless be often cultivated, were it not that more beautiful species are brought from other countries, some of which have long been reared in our gardens.

The Cyclamen genus is one of southern and eastern lands. All the species have large acrid tubers; and the acrid principle is said by Professor Burnett to be peculiar to these plants: it has been called *Arthanitine*. The fondness of swine for the roots originated the English as well as some of the continental names of the plant. Swine-bread is an old name for it; and the French call it *Pain de Porceau*, or, as it is provincially termed, *Pain de pur*. Our old medical writers called the plants *Tuber terræ* or *Terræ rapum*. In Italy it is called Ground-bread (*Pane terreno*), as well as *Pane porcino;* and in that country, as in Sicily, where it is abundant, it is the chief food of large herds of swine, and has been much used medicinally. The Germans call it *Erdscheibe;* the Dutch, *Varkensbrood;* and the Swedes, *Svinbröd*.

4. Sea Milkwort (*Glaux*).

Sea Milkwort, or **Black Saltwort** (*G. maritima*).—Stem generally procumbent; leaves opposite, egg-shaped, smooth, entire; flowers axillary, sessile; perennial. This is a little succulent plant, from three to six inches high, growing in masses among the grass of the salt-marsh, on the mud of the seashore, or among the rocks just above high water, often in great abundance, its thick, tough rootstock wedged and flattened between the layers of rock. If kept moist, it will also grow very well inland in garden pots, and looks very pretty on rock-work. It bears, from May to August, little flesh-tinted flowers, dotted with crimson; and its thick smooth leaves are of a greyish-green hue. The blossoms are destitute of a corolla, but the calyx is coloured instead. The stamen-filaments are coloured a deep crimson, and they lengthen after the flower opens. This plant is sometimes called Newton's Knot-grass. The French call it *Glauce;* the Germans, *Milchkraut;* the Dutch, *Melkruid;* and the Danes, *Melkürt*.

5. Chickweed Winter-green (*Trientális*)

European Chickweed Winter-green (*T. europæa*).—Leaves rigid, oblong, egg-shaped, shining; perennial. This pretty little plant was a great favourite with Linnæus. It is found occasionally in the north of England, and is abundant in the Scottish Highlands. The stem is without branches, from four to six inches high, having a few large leaves near its top, and two or three small distant scales below. From among the terminal, whorled larger leaves arise from one to four slender stalks, each bearing a small white flower with a yellow ring. The number of stamens varies from seven to nine, and the seeds have a beautiful covering, like a delicate lace-work. Its creeping thread-like stem is somewhat acrid in taste. The plant is rare, and confined to the north of this kingdom. It occurs on Hambleton Hills, Swill Hill, near Halifax, and on the moors about Teesdale. It is not found in Ireland. The French call this plant *Trientale;* the Germans, *Sternblümchen;* and the Dutch, *Vintergrön.* It flowers in June.

6. Loosestrife (*Lysimáchia*).

1. **Great Yellow Loosestrife** (*L. vulgáris*). — Stem erect, panicles compound, terminal, and axillary; leaves egg-shaped, or egg-shaped and lanceolate, nearly sessile, opposite, or three or four in a whorl; segments of corolla entire; stamens five, combined for half their length; perennial. This very handsome flower of our stream sides, though frequent in some places, is rather local in its haunts. Its branched upright stem is two or three feet in height, and its large yellow panicle has slender bracts growing among the blossoms. The foliage is smooth or somewhat downy beneath, and of rather dull green, and the flowers appear in July and August. This species was much used in former days medicinally. Lysimachus, the king of Sicily, according to Pliny, first discovered its medicinal virtues. It had besides, in the opinion of the old writers, the power of quieting the restive oxen, if laid beneath their yokes. It is sometimes called Yellow Willow-herb. The French term it *Lisimaque;* the Germans, *Gelbe weiderich;* the Dutch, *Weiderick;* the Italians and Spaniards, *Lisimachia.*

The Ciliated Loosestrife (*Lysimachia ciliata*) has been found near Serbergham, Cumberland; but though naturalized on this spot, it is a North American species. It has an erect stem; its yellow flowers are stalked, and either in whorls or somewhat racemed; its leaves are egg-shaped, lanceolate and heart-shaped, with fringed footstalks; the lobes of the corolla are crenate, and it has ten filaments, all distinct, five of which are sterile.

Some specimens of the Westphalian Loosestrife (*L. punctata*) have also been found near Newcastle. It differs from *L. vulgaris* in having solitary axillary pale yellow flowers, and a corolla fringed with glandular hairs.

2. **Tufted Loosestrife** (*L. thyrsiflóra*). — Stem erect, unbranched; leaves opposite, lanceolate, sessile, upper dotted with black; racemes dense, many-flowered, stalked, axillary; segments of the corolla very narrow, and separated by minute teeth; perennial. This plant is rare in England, occurring on marshes in some parts of Yorkshire and Notts, but it is more frequent in Scotland. It is one or two feet high, and the small yellow

1 SOW BREAD
Cyclamen hederæfolium

2 SEA MILKWORT
Glaux maritima

3 CHICKWEED WINTER GREEN
Trientalis europæa

blossoms grow in a thick cluster at the top of the stem, and are, as well as the calyx, spotted with orange. They expand in July.

3. **Yellow Pimpernel,** or **Wood Loosestrife** (*L. némorum*).—Leaves opposite, egg-shaped, acute, shortly stalked; stem prostrate; stalks one-flowered, axillary, longer than the leaves; filaments smooth, distinct; perennial. This species well deserves its name of Yellow Pimpernel, for its leaf both in form and hue, and its blossom in shape, at once suggest the resemblance to the Scarlet Pimpernel. It is somewhat straggling in habit, its weak stem and branches trailing over the ground to a length of a couple of feet. The flowers are of bright yellow, and may be found in the woods from May to July.

4. **Creeping Loosestrife, Moneywort,** or **Herb Twopence** (*L. nummulária*).—Leaves opposite, somewhat heart-shaped or egg-shaped, blunt, shortly stalked; stem prostrate, creeping; stalks one-flowered, axillary, solitary, shorter than the leaves; filaments glandular, connected at the base; perennial. This species is so frequently cultivated on artificial rock-work, or on the borders of fountains in gardens, that it is well known. Nor is it uncommon as a wild plant, growing often about ruins or in damp woods, hanging down the sides of mossy slopes, its branches trailing a foot or more in length, well clad with roundish shining deep-green leaves, and bearing in June and July its numerous handsome flowers of bright yellow. It multiplies rapidly by the root and stems, but though a very hardy plant it rarely, if ever, produces seed in this country. It was formerly considered an excellent wound-herb, decoctions of the plant made with wine or water being drunk by the sufferer, while lotions prepared from its juices were used externally. It probably possesses some slightly astringent properties. Like most of the Primrose tribe, it is unpleasing to cattle.

7. Pimpernel (*Anagállis*).

1. **Scarlet Pimpernel** (*A. arvénsis*).—Stem ascending or somewhat prostrate; leaves opposite or in threes, egg-shaped, sessile, dotted beneath; flower-stalks longer than the leaves; calyx nearly as long as the wheel-shaped corolla; annual. The normal form of this flower has a scarlet corolla, often fringed with minute glandular hairs. In another form, in which the margins of the corolla are toothed and scarcely at all glandulose, the colour is bright blue. This is the *A. cærulea* of some writers. Another variety is white, or white with a purple eye, and is the var. *pallida* of botanists. The names of Shepherd's Barometer and Poor Man's Weather-glass, by which the Scarlet Pimpernel has long been known, are very appropriate—with limitations. The flower never opens on a rainy day, and long before the shower is coming it is conscious of its approach, and closes up its petals. Several of our wild-flowers close, like the convolvulus, before rain, but none are such good barometers as this. It was early noticed by naturalists. Derham, in his "Physico-Theology," says: "The flowers of Pimpernel, the opening and shutting of which are the countryman's weather-wiser; whereby, Gerarde saith, he foretelleth what weather shall follow the next day; for, saith he, if the flowers be close shut up it betokeneth rain and foul weather; contrarywise,

if they be spread abroad, fair weather." Lord Bacon, too, who calls it Winco-pipe, noticed this peculiarity. Leyden thus alludes to the flower :—

> "Such is the science to the peasant dear,
> Which guides his labour through the varying year,
> While he, ambitious 'mid his brother swains
> To shine the pride and wonder of the plains,
> Can in the Pimpernel's red-tinted flowers,
> As close their petals, read the measured hours."

Not only does the Pimpernel shut up its blossoms during rainy and cloudy weather, but it is one of the best of the *Florœ Horologicæ*, opening its petals in our latitude at about ten minutes past seven in the morning, and closing them a few minutes after two in the afternoon. Therefore it is futile to consult the Pimpernel as a barometer after 2 p.m. It is interesting to remark the regularity with which some of the plants of our woods and fields fold or unfold their blossoms. Who ever saw a goat's-beard open on a summer afternoon ? Long before that part of the day it had gone to its daily sleep. Nor in other climates are these peculiarities less frequent, for Dr. Seemann, the naturalist, who accompanied Kellett's Arctic Expedition, mentions as a curious fact the regular closing of the flowers during the long day of an Arctic summer. "Although," he says, "the sun never sets while it lasts, the plants make no mistake about the time, when if it be not night it ought to be ; but regularly as the evening hours approach, and when a midnight sun is several degrees above the horizon, they droop their leaves, and sleep even as they do at sunset in more favoured climes." This naturalist adds, that if ever man should reach the Pole, and be undecided which way to turn when his compass has become sluggish and his timepiece out of order, the plants which he may happen to meet with will show him the way ; their sleeping leaves tell him that midnight is at hand, and that at that time the sun is standing in the north.

Constant as are the flowers under their accustomed circumstances, yet there are certainly cases in which, if unusual darkness come upon them, they do, as Dr. Seemann expresses it, make "a mistake." Some years since, when an eclipse of the sun brought darkness at mid-day, the author of these pages went out to examine the flowers and leaves. Both were folded up just as at midnight. Various species of garden convolvulus, the pheasant's-eye, and several other flowers were quite closed, and daisies and marigolds had "gone to bed with the sun." The leaves of lupins, and laburnums, and robinias all hung drooping as at night-time, and as the darkness gradually disappeared, so the flowers and leaves opened, and stood erect, as if to meet the dawn.

The Pimpernel is bright scarlet, with a purple eye, and it is, with the exception of the poppies, our only scarlet wild-flower. The leaves are of a somewhat sea-green hue, quite smooth, often marked on the under side with small black specks, and the stems are square, and very brittle. These are about three or four inches long, and often lie close to the soil. The flowers may be seen from May to November. The white variety, with a purple eye, is a very pretty little flower. Mr. Dillwyn Llewellyn found it at Pennllogan, in South Wales ; and we have several times found it near Chatham, in Kent, both as a garden weed and in the cornfield. The Blue Pimpernel is of a rich

1. GREAT YELLOW LOOSESTRIFE
   Lysimachia vulgaris
2. TUFTED L.
   L. thyrsiflora
3. WOOD L.
   L. nemorum
4. CREEPING JENNY
   L. nummularia
5. SCARLET PIMPERNEL
   Anagallis arvensis
6. BOG P.
   A. tenella

Pl. 174.

blue colour. It occurs commonly in Germany, Switzerland, and Sweden; and in this kingdom is frequent in Devonshire and Gloucestershire, and found also in some parts of Surrey, Cambridgeshire, and other counties. The varieties are by some good botanists thought to be probably distinct species, but Professor Henslow's experiments on the flower would lead to a different conclusion. This botanist, who received specimens and seeds of *Anagallis cærulea* from Yorkshire, raised from the seeds about a dozen plants, nine of which had blue and three red flowers. He received also a pale pinkish variety from Higham, in Kent, and seeds from Yorkshire of the white variety with a purple eye. From these seeds he raised seven plants, one of which produced red, and the other six white blossoms, tinged more or less with light pink, and having a bright pink eye. Mr. Borrer suspects that the Pimpernel in each variety has sometimes blue and sometimes red flowers.

Our Common Pimpernel grows everywhere—on sunny bank, on gravelly or sandy heath, in the furrow of the field, or on the bed of the garden. Dioscorides and Pliny had much to say of its excellence as a medicine in liver complaint; and from its use in removing the dispirited feelings so consequent on that malady, they tell how it gained its scientific name from *anagalao*, to laugh; but the name is more likely to be, as Sir W. J. Hooker considered it, from the Greek words signifying "again" and to "adorn," because it comes every summer to grace our pathways. Our fathers' idea of its efficacy was greatly overrated. "It is," says an old writer, "a gallant solar herb, of a cleansing, attractive quality, whereby it draweth forth thorns and splinters, or other such like things gotten into the flesh." This power of drawing forth, not only thorns, but even "arrows which were broken in the flesh," was universally ascribed to the plant, and led some botanists to think that the genus was named from *anago*, to extract, which, however, is scarcely probable. The bruised leaves formed the application in these cases, and were believed also to cure persons bitten by a mad dog. The distilled juice was said by an old herbalist to be much esteemed "by French dames to cleanse the skin from any roughness, deformity, or discolourings thereof." Gerarde affirmed that "it helped them that are dim-sighted." The Greeks and Romans used the juices of the plant, mixed with honey, for complaints in the eyes; and so many were the cures effected by this little plant that an old proverb, once in familiar use among our fathers, is thought by John Ray probably to refer to the imputed virtues of the Pimpernel:—

"The dasnel dawcock sits among the doctors."

Several old medical writers of good repute had great confidence in cures which they had wrought in diseases of the brain by means of the juices of this flower; and we might cite half a dozen well-known authors who, like Ettmüller, highly extol its efficacy in hypochondriasis and similar maladies. Professor Lindley says, "It has had some reputation in cases of madness, and appears to possess energetic powers, for Orfila destroyed a dog by making him swallow three drachms of extract of the plant." A similar result was obtained by Grenier, and in our own times the plant has been prescribed in cases of epilepsy and dropsy.

Both the Blue and the Scarlet Pimpernels were known to ancient writers,

who were pleased to term the blue-flowered variety the female, and the red the male Imperial Pimpernel. Pliny had a notion that sheep avoided the Blue and ate the Scarlet Pimpernel, which he, with some reason, regards as a very strange circumstance, because, as he says, the plants are alike in all save the colour of the flowers. He adds, that if by mistake the sheep cropped the Blue Pimpernel, they sought forthwith for a plant which he names, but which modern botanists cannot identify.

The French call our pretty little flower *Mouron;* the Germans, *Gauchheil;* the Dutch, *Guichelheil;* the Italians, *Anagallide;* the Russians term it *Kurjàtschja nogà trawà.*

2. **Bog Pimpernel** (*A. tenélla*).—Stem creeping; leaves egg-shaped, or roundish, stalked; flower-stalks longer than the leaves; petals entire, much longer than the calyx; perennial. All botanists enjoy wandering over a bog, for there may be seen some of the choicest gems of our native flora. The Bog Pimpernel is a not unfrequent plant there, its delicate rose-coloured flower peeping up in June and July from among the turf, and making with the moss a beautiful carpet. The blossoms are not much like those of the Pimpernel of the corn-field, but look at first like tiny convolvuluses, seated on a stalk no thicker than a sewing-thread, about four inches long, with leaves so small that a whole spray of them might lie beneath a sixpenny-piece. The segments of the blossom are seldom so expanded as to become quite flat, but are more often erect, and appearing as if not fully blown. The plant sometimes grows on the borders of rivulets.

8. CHAFFWEED (*Centúnculus*).

Small Chaffweed, or **Bastard Pimpernel** (*C. mínimus*).—Leaves egg-shaped, alternate, acute, and smooth; flowers nearly sessile, axillary, and solitary; annual. This is among the smallest, perhaps quite the smallest, of all our wild-flowers. It is not very common, and is doubtless sometimes overlooked on the moist gravelly spots on which it grows. It is found in various places, as in some parts of Norfolk, about London, on Brabourne and Willesbro' Leas, in Kent, and on some wet sandy places in Hampshire and other counties; as well as in the south of Ireland, and the Lowlands of Scotland. It has something the appearance of a stunted Pimpernel. Its minute flowers are pink or white, but never very bright. They expand in June and July. The stem is sometimes branched, but more often it is simple, and bears about six or eight alternate leaves, among which are placed about the same number of little blossoms. The French call the Chaffweed *Centenille bassette,* the Germans, *Centunkel,* and the Dutch, *Zeer Klein guichelmuur.* The species seems to grow throughout Europe, and may or may not be the *Centunculus* of the Romans, which was, however, apparently a plant of cultivated grounds.

9. BROOKWEED (*Sámolus*).

Brookweed, or **Water Pimpernel** (*S. valerándi*).—Leaves blunt, racemes many-flowered; flower-stalks with a small bract; perennial. This Brookweed grows in damp and watery places, especially where the soil is of gravel, but it is not frequent. The rounded stem is about eight or ten

inches high, and, like the leaves, smooth and of pale green hue. The foliage is thick and succulent, and the small white flowers, which may be seen from July to September, are much crowded while young, but gradually become more distant from each other. The plant is in some country-places considered a certain cure for any malady affecting swine. It is believed to have been used in the mystic ceremonies of the Druids.

Our little Brookweed, like our common meadow-grass, is a cosmopolite, and like the shepherd's purse seems to follow man wherever he sets his foot. Sir Joseph Hooker, who observed the two latter herbs at East Nepal, looked at them there with some emotion. Plants like these, he says, give rise to trains of reflection in the mind of the traveller who is a naturalist, and "the farther he may be from home and friends, the more wild and desolate the country he is exploring, the greater the difficulties and dangers under which he encounters these subjects of his earliest studies in science, so much keener is the delight with which he recognises them, and the more lasting the impression which they leave. At this moment these common weeds more vividly recall to me that wild scene, than does all my journal, and reminds me how I went on my way, taxing my memory for all I ever knew of the geographical distribution of the shepherd's purse, and musing on the probability of the plant having found its way thither over all Central Asia, and the ages that may have been occupied in its march."

The French call our Brookweed *Samole;* the Germans, *Samoskraut;* the Dutch, *Strandpungen*, and the Danes, *Strandsamel.* The word *Samolus* is by some writers derived from two Celtic words, *san*, salutary, and *mos*, pig; and Pliny refers to its ancient use as a medicine for swine. The plant received its specific name in memory of Dourez Valerand, a botanist of the sixteenth century, mentioned by Bauhin. And some authors consider that the genus was named from Samos, the birthplace of Valerand.

Order LXVI. PLUMBAGINEÆ—THRIFT TRIBE.

Calyx tubular, plaited, chaffy, not falling off, often coloured; corolla 5-cleft nearly to the base; stamens 5, opposite the petals; ovary of 5 carpels, 1-celled; styles 5; fruit 1-seeded. This order consists of herbaceous or somewhat shrubby plants, with undivided fleshy leaves, and flowers often forming heads or spikes. They inhabit the sea-shores of most temperate regions, some being found also on mountains. They vary in properties, some being very acrid, others useful as tonic medicines.

1. THRIFT (*Arméria*).—Calyx funnel-shaped, plaited, dry, membranaceous; petals united at the base, bearing the stamens; styles distinct, hairy; stigmas glandular; flowers in heads. Name from *Flos Armeria*, which was an old monkish name for one of the sweet-william pinks.

2. SEA LAVENDER (*Statice*).—Calyx funnel-shaped, plaited, dry, membranaceous; petals united at the base, bearing the stamens; styles distinct, smooth; stigmas glandular; flowers in one-sided panicles. Name from the Greek *statizo*, to stop, from some supposed medicinal virtues.

1. THRIFT SEA-PINK (*Arméria*).

1. **Common Thrift, Sea Pink,** or **Sea Gilliflower** (*A. maritima*).—Leaves linear, 1-nerved; awns of the calyx short; perennial. Several varieties of this Thrift are known to botanists. In one form the leaves are flattish above, and the calyx-tube uniformly hairy; in another having the leaves thus flattened, the calyx-tube is hairy on the ribs only, and smooth between them; in a third form the leaves are grooved, and dotted above, and the calyx-tube uniformly hairy, while in another variety the leaves are grooved above, and the calyx-tube is hairy on the ribs only; the last form is very rare. Most dwellers on our seashores know well the pretty Thrift, for it is often used as a common garden border in towns and villages near the sea. It is also often brought inland for the same purpose, for which, as old Gerarde observes, "it fitly serveth." Though not in such general use as in the days of this old botanist, yet its pink tufts look well still amid their long grassy leaves by many a flower-plot, and are rendered larger by culture, and reddened into the hue of the rose itself. It is, however, truly, when wild, a seaside plant, often occupying, as Hugh Miller says, with "its green prominent cushions," the flat salt marsh, and standing up sometimes like "little islets amid the flowing sea." Thousands of the Thrift plants form these tufts over the marshes, and are thus watered at spring tides, while far beyond them we may see the fleshy jointed stems of the glass-wort growing out of the mud. On many marshes, however, the Thrift is never wholly covered, and far as the eye can see the blossoms are enlivening the dreary waste in such numbers as to remind us of Tennyson's words—

> "Wonder at the bounteous hours,
> The slow result of winter showers,
> You scarce can see the grass for flowers."

Sometimes they are of a deep rose-colour, and occasionally they are white, but more frequently these blossoms are of pale pink, which becoming paler as they grow older, give an aspect of whiteness to the grassy soil. The stalk of the Thrift is about three or four inches high; pale brown scales mingle among the blossoms, and brown chaffy bracts, one, two, or three in number, grow beneath the head and form a covering to the upper part of the stalk.

But our Thrift is not a "Sea-grass" only. It occurs on mountains far away from the sound of the wave, and in the Highlands of Scotland ascends as high as 3,800 feet. It gives to the children of the mountaineer a beautiful summer nosegay, and might have been among the blossoms of which Rogers has said—

> "In happy ignorance, the children played,
> Alike unconscious, through their cloudless day,
> Of what they had, and had not; everywhere
> Gathering rock flowers, or with their utmost might
> Loosening the fragment from the precipice,
> And, as it tumbled, listening for the plunge."

The Thrift grows well on sea rocks, and up the face of high cliffs, as well as on the tops of the stone hedges at their top. It doubtless acquired its familiar name from thriving on the little nutriment such places afford. The Germans give the plant the appropriate name of *Das Seegras;* and in

1. SMALL CHAFFWEED.
Centunculus minimus.
2. WATER PIMPERNEL.
Samolus valerandi.
3. THRIFT.
Armeria maritima.
4. PLANTAIN LEAVED T.
A. plantaginea.

Pl. 175.

Queen Elizabeth's time it had the English name of Lady's Cushion, and the French one of *Gazon d'Espagne.*

A bitter and astringent principle exists in the Thrift, but it is remarkable that the plant secretes different substances on the different soils. When growing near the sea it is found to yield iodine and salts of soda, while the mountain plant loses the iodine and yields potash instead of soda. When wild the Thrift produces seed, but when removed to the garden it can be propagated only by dividing the roots. It flowers from April to September, and its leaves are all from the root.

2. **Plantain-leaved Thrift** (*A. plantagínea*).—Leaves linear-lanceolate, 3—5-nerved; awns of the calyx long; perennial. This Thrift, which is found in great abundance in Jersey, on the sandy districts of Quenvais, is readily distinguished from the common species. It has much broader leaves, and its calyx has long bristly teeth. The flowers, which expand in June and July, are of pale purple colour.

2. Sea Lavender (*Státice*).

1. **Spreading Spiked Sea Lavender** (*S. limónium*).—Leaves oblong and lanceolate, stalked, tipped with a spine, one ribbed; stalk with a much branched spreading corymb at the top; branches curved outward; spikes short, densely flowered; calyx segments entire, acute, with intermediate teeth; outer bract pointed, small; perennial. The

"Pale Sea Lavender, that lacks perfume,"

is, however, a very handsome flower. Though rare in Scotland, it is quite common in England on muddy shores and salt marshes, from July to September. One may see it at a great distance, for its large level-topped cluster of small blossoms is of bright though light lavender colour, and stands on a leafless stalk one or two feet in height. Its cluster branches off into several spreading somewhat flattened tufts, which stand on angular stalks. The leaves are of bright green, sometimes a foot long, very strongly nerved, and the sharp point turns backward.

2. **Remote-flowered Sea Lavender** (*S. bahusiénsis*).—Leaves oblong-lanceolate, stalked, tipped with a spine, one ribbed, faintly nerved; stalk much branched from near the base, panicled; branches ascending or curving inwards; spikes elongated, with rather distant flowers; calyx segments acute, with intermediate teeth; perennial. This species is very nearly allied to the last, but its stalk always branches from near the base, and its clusters are not level-topped. It flowers in June and July, and has pale lilac flowers. It seems more generally distributed than the last species on the muddy shores of this kingdom. Some botanists class it as a sub-species of *S. limonium*, and it is also known as *S. rariflora.*

3. **Upright Spiked Sea Lavender** (*S. binervósa*).—Leaves inversely egg-shaped above, narrowing below into a broadly-winged stalk, more or less spine-tipped, and three-nerved at the base; stalk branched from below the panicle; elongated branches in two rows; spikes erect; calyx with flat blunt segments, without intermediate teeth, limb white; perennial. This plant was formerly regarded as a variety of *S. limonium*, from which, however, it

is very distinct. It is also by various writers termed *S. spathulata*, or *S. auriculæfolia*. It grows on rocks and cliffs on the east coast from Lincoln to Kent, and on the west from Wigton to Cornwall; also in Ireland and the Channel Isles, but it is not frequent. When walking under the cliffs at Dover, or among the paths which intersect those stupendous heights, we may, in July and August, find it in abundance, sometimes at our feet, or within reach of the hand, or sometimes forming tufts over the summits, beside the nests of the sea-birds. It is easily known from the species already described, by its spathulate leaves, and by its small size. The leaves are of a pale sea-green hue, rather thick, and waved at the edges, with a strong midrib, and two, or sometimes four, nearly parallel ribs reaching to within a third of the top of the leaf, which is tipped with a small spine. They form a spreading tuft around the base of the panicled stalk, which is rarely more than half a foot high, branched below the middle into several forked erect tufts of pretty bluish-lilac flowers, with deep pink bracts.

Mr. G. E. Smith, in his "Flora of South Kent," says of this plant, "This species, so long overlooked as distinct from *S. limonium*, notwithstanding the decision of Gerarde and Ray, the careful record of localities, and cultivation for above a hundred years in the Chelsea, and long since in the Oxford garden, appears under as great a variety of names as a Spanish grandee." He adds that the most obvious character is presented by the leaves, and by the structure of the calyx. This is for half its length membranous, and is closed after flowering, in which respect it differs from *S. limonium;* which, having the hard ribs continuous nearly to the summit of the calyx, exhibits that part expanded after flowering.

This little plant, like the common Sea Lavender, is destitute of perfume, but retains the hue and form of its flowers long after gathering, and much of the tint remains even through the winter. Visitors from inland places are generally attracted by these sea-side flowers, and such large numbers of the plant are ruthlessly torn up from favourite seaside resorts every summer, that one wonders that it is not wholly extirpated. Mingled, however, with the carline thistles, and some of the grasses from the cliff or meadow, with a branch or two of the prickly sea holly, it serves for a winter ornament, and may awaken a pleasant memory of the by-gone summer walk, and the look or tone of friendship. If the capsule of scarlet berries which the wild blue iris bears on its stalk in autumn be added to the group, a permanent bouquet may be formed, scarcely less beautiful than that of summer flowers.

Some botanists follow the division made by Boissier of the *S. binervosa* into two species, *S. dodartii* and *S. occidentalis;* the former having no sterile branches, and the latter having the few lowest branches sterile. The authors of "The British Flora," however, remark that they find every intermediate form among their British specimens.

4. **Matted Thrift** (*S. cáspia*).—Leaves somewhat wedge-shaped, narrowed into a footstalk; stalks branched from near the base with numerous slender zig-zag branches, repeatedly and acutely forked, the uppermost alone bearing terminal spikes of 2—3-flowered, two-ranked spikelets; calyx segments egg-shaped, tapering suddenly and toothed; perennial. This is a very rare species of Sea Lavender, found on the muddy

1. SPREADING SPIKED SEA LAVENDER
Statice limonium.
2. REMOTE FLOWERED S. L.
S. behusiensis.
3. UPRIGHT SPIKED S. L.
S. binervosa.
4. MATTED THRIFT
S. caspia.

salt marshes of Norfolk, Suffolk, and Cambridge. It is the smallest of the British species, and remarkable for its much divided sterile branches, which fork at an acute angle, and are very slender. The flowers are small and crowded, of a pale lilac colour, expanding in July and August, in one-sided terminal spikes. It is also known as *S. bellidifolia.*

Order LXVII. PLANTAGINEÆ—PLANTAIN TRIBE.

Calyx 4-parted; corolla 4-parted, chaffy, not falling off; stamens 4, alternate with the segments of the corolla, and having very long thread-like filaments, and lightly attached anthers; ovary 1 or 2-celled; style 1; stigma hairy; capsule splitting transversely; seeds 2—4, or many in each cell. This order consists of herbaceous plants with slightly bitter and astringent leaves, and mucilaginous seeds. Several of the tribe are found in all temperate regions.

1. PLANTAIN (*Plantágo*).—Calyx 4-cleft, the segments bent back; corolla salver-shaped, with 4 spreading lobes; stamens very long; capsule splitting all round, 2—4-celled. Name of doubtful origin.

2. SHORE-WEED (*Littorélla*).—Stamens and pistils in different flowers; barren flower stalked; stamens very long; fertile flower sessile; bracts 3; corolla tubular, contracted at both ends; style very long; capsule 1-seeded. Named from *littus*, the shore, its place of growth.

1. PLANTAIN (*Plantágo*).

1. **Greater Plantain** (*P. májor*).—Leaves broadly egg-shaped, mostly on long channelled stalks; flowers in a long cylindrical tapering spike; sepals with a prominent nerve at the back; capsule 2-celled; seeds oblong; perennial. Few of the dustiest and driest of our roadsides are without some token of vegetation. Something besides a few blades of grass usually forms a margin, which pleases the eye of man, and gives food to some beast or bird or insect. We can scarcely wander away from the closely-paved city into some suburb in which the more thinly-scattered dwellings gradually prepare us for the country road, without finding a tuft of Plantain. Its broad, strongly-veined leaves lie spread around its rootstock, and from June to September its tall spikes of greenish flowers, or the brown ripened seeds which succeed them, invite the possessor of the captive bird to carry the plant away for the meal of the songster. To thousands of bright and joyous creatures, linnets, finches, and other wild birds, the young buds and seeds of the Plantain afford a supply of food; and doubtless the poet was right who told that to some of the insect race the broad leaf served as a canopy:

> "While the moth for night's repriefe
> Waited safe and snug withal,
> 'Neath the Plaintain's bowery leaf,
> Where not e'en a drop could fall."

The flowers are on a stalk about a foot high, densely crowding it to about the middle, and at the base of each little flower is a small bract. The length of the leaf-stalk differs, and the leaves have usually seven nerves. There is

a dwarf variety (var. *intermedia*) with downy leaves which have only three nerves or ribs.

This Plantain is so especially a wayside herb that its old name of Way-bred or Way-bread seems very appropriate, and the Germans call it *Wegerich*, and the Dutch, *Weegbree*. Our English name is, however, of Saxon origin, and was originally Wabron, or Wabret, and the plant is still in Teviotdale called Wabret-leaf. Leyden thus refers to it:—

> "As every prospect opens to my view
> I seem to live departed years anew;
> When in these wilds a jocund sportive child
> Each flower self-sown my heedless hours beguiled;
> The Wabret-leaf that by the pathway grew,
> The wild-briar rose, of pale and blushful hue,
> The thistle's rolling wheel of silken down,
> The blue-bell or the daisy's pearly crown,
> The gaudy butterfly in wanton round,
> That, like a living pea-flower, skimm'd the ground."

The Plantain often grows on pasture lands, and some animals eat its herbage, though it yields but a small amount of nutriment. It is a common plant all over Europe, and so generally follows in the train of the cultivator, that wherever an English colony is founded it is sure to spring up among the weeds, and it may consequently be seen in almost every climate, receiving in some of our settlements the name of the Englishman's Foot.

Some degree of astringency exists in the leaves and roots of this Plantain, but not enough to warrant the praises bestowed on the herb by the old writers. Pliny handed down the repute of its sanative powers, and though this is lessened, yet it is not altogether lost in our day. In the words of his translator, Pliny records that "Themison, a famous physician, sets forthe a whole booke of the hearbe Waibred or Plantaine, wherein he highly praiseth it; and challengeth to himselfe the honour of first finding it out, notwithstanding it be a triviall and common hearbe trodden under everie man's foote." The juice of the plant was considered good for various ills, and Dioscorides imagined that the water derived from three roots cured the tertian, and from four, the quartan ague; while grave and learned writers of later days set it down in their books as a well-ascertained fact that the toad when about to encounter the spider ate of the Plantain-leaf, and that if wounded, it sought again the same remedy. George Herbert mentions the Plantain as an herb to be used medicinally by the "parson," who in those days was to regard as his province the bodily as well as the spiritual maladies of his flock. It was, however, more especially as a vulnerary that the plant was held in universal esteem, and from Chaucer downwards we find it alluded to as an application to wounds. It was not Romeo alone who would, when referring to the "broken shin," say,

> "Your Plantain-leaf is excellent for that;"

it was the common opinion. Shenstone also mentions it:

> "And pungent radish, biting infant's tongue,
> And Plantain ribb'd, that heals the reaper's wound."

And it is likely that the wound would heal, not simply by means of the astringent juices, but also by being bound together by the broad cool leaf.

1. GREATER PLANTAIN.
Plantago major.

2. HOARY P.
P. media.

3. RIBWORT P.
P. lanceolata.

Pl. 177.

The leaves are yet used in villages for slight wounds, and it is remarkable that they are applied thus on the Himalaya Mountains. Sir Joseph Hooker, referring to the number of sick persons who came to him to be cured of rheumatism, goitres, and other complaints, as well as from cuts and poisonings, mentions that one old woman whom he attended dressed her wounds with Plantain-leaves, which, he adds, is a very old Scotch remedy, the ribs being drawn out, and the leaf applied fresh. "It is," says Sir Joseph, "rather a strong application." A negro once received a reward from an assembly of South Carolina for a remedy for the bite of the rattle-snake, the chief ingredient of which is said by Mr. Woodville to be the Plantain. The leaves bruised and placed over the part stung by a bee soon relieve the pain. The French call this herb *Plantaine;* the Italians, *Piantaggine;* the Spaniards, *Llanten;* and the Russians *Uschik.*

2. **Hoary Plantain** (*P. média*).—Leaves egg-shaped, downy, sessile, or tapering into broad or short foot-stalks; flower-stalk rounded; spike cylindrical; sepals not keeled; capsule 2-celled; cells 1-seeded; perennial. This species is common on the meadows and pastures of chalky districts of England. Its leaves spread all around the root, lying close to the earth; and the Rev. C. A. Johns remarks that they destroy all the vegetation beneath, and leave the impress of the ribs on the ground. It bears a pretty and fragrant spike of flowers from June to October, having long dark purple filaments, and light purple anthers. The spike looks quite silvery from the white, shining, somewhat chaffy corollas, and is regularly visited by humble-bees for the sake of the plentiful pollen. The leaves make a good astringent lotion. There are two forms of this plant: in one the flower-stalk is long, the corolla-lobes pointed, and the stamen-filaments white; in the other, the scape is shorter, the corolla-lobes rounded, and the stamen-filaments red.

3. **Ribwort Plantain** (*P. lanceoláta*).—Leaves lanceolate, tapering into a broad stalk; spike egg-shaped or cylindrical; bracts egg-shaped, acute, blackish-tipped, two of the sepals keeled; tube of the corolla smooth; stamens white; cells 1-seeded; perennial. The Ribwort is often very abundant on upland soils, and is generally a common plant of the meadow. It may be at once distinguished from the preceding species by the erect habit of the leaves and the woolly crown to the rootstock. The flowers are in dark brown, hard spikes, and are called by country children Cocks and Hens. They appear in June and July, and in a very luxuriant variety they are very long and truly cylindrical, while in some specimens they become quite globular in form. Sometimes the bracts are so large as to be converted into leaves; and sometimes a second spike on a short stalk grows from among the bracts in a horizontal direction. The leaves are long and strongly ribbed. An old Welsh name for the plant is "Suet producing," and it has also been called the "sheep's favourite morsel." It bore besides, in early days, the name of Hound's-tongue, and modern farmers term it Rib-grass, including it among those plants which they distinguish as artificial grasses. It has long been used occasionally for herbage, and Arthur Young, as well as other writers on pasture plants, regarded it with approval. Much uncertainty had, however, prevailed respecting its usefulness, until the experiments of Professor Buckman on this and other plants tested it. The Professor says that

it is a very good food for sheep, and that when mixed with other plants on the pasture it is truly valuable; but that it should not form too large a proportion of the herbage. He remarks that in one field of seeds where scarcely any plant but this Rib-grass appeared, it was so distasteful to cattle as to be almost entirely refused by them. He adds that its upright mode of growth, compared with *P. media*, the leaves of which grow flat on the ground, will recommend it, or at least lead to its not being molested, on the pasture. The latter plant, he says, should always be treated as a weed. An abundant growth of the Ribwort is always indicative of a dry soil. A foreign variety of this species, known as *P. timballi*, is sometimes introduced with clover-seeds. It is distinguished by having broad silvery margins to the bracts and sepals.

The seeds of this plant afford some mucilage, though in much less quantity than those of several foreign species of Plantain. The seeds of *P. psyllium*, *arenaria*, and *cynops*, which are peculiarly mucilaginous, have been used instead of linseed and marsh-mallows in demulcent drinks; and both in France and in India the seeds of some of the genus are commonly prescribed by physicians. The seeds of *P. arenaria* are also said by M. de Candolle to be exported in considerable quantities from Nismes and Montpellier to the north of Europe, to be used by manufacturers of muslins in giving stiffness to their fabrics.

4. **Sea-side Plantain** (*P. maritima*).—Leaves linear, grooved, fleshy, convex below; stalk rounded; spike cylindrical; bracts egg-shaped and pointed; sepals not winged; tube of the corolla downy; capsule 2-celled, cells 1-seeded; perennial. This is not an unfrequent plant on salt marshes, in the clefts of sea-rocks, on muddy banks, and at the bases or on the slopes of mountains. It varies much in size, its leaves being sometimes not more than an inch, and at others a foot long. It is readily known from the other species, by these slender leaves, and by its greater succulence, and paler green tint; but the spike, except in being slighter and longer, much resembles both in flower and seeds that of the Greater Plantain, and like that may be seen from June to September or October. It has, in common with most plants of the salt marsh, a saltish flavour, and probably the wild birds eat its young buds and seeds, for these are greatly relished by the caged goldfinch. Two varieties occur rarely among rocks. In one of them the leaves are almost flat, and somewhat lanceolate, toothed and smooth, with a densely hairy stalk. This is the form termed *major;* while a variety called *minor* has linear lanceolate leaves, which as well as the stalk are densely hairy. In this latter form, which is found in the Orkneys, the leaves are sometimes almost thread-like.

5. **Buck's-horn Plantain** (*P. cornopus*).—Leaves linear, pinnatifid and toothed; stalk rounded; bracts egg-shaped and awl-shaped; lateral sepals with a membranous fringed wing at the back; capsules 4-celled; cells 1-seeded; annual or biennial. This is a singular little plant, with all the general appearance of the other Plantains, save in its cut leaves. These are more or less downy, usually prostrate, and often a good deal tinged with red, especially when growing on cliffs by the sea. The plant is often common on sea-cliffs, and it grows also on gravelly sterile soils, both near the coast

1. SEA SIDE PLANTAIN
P. maritima

2. BUCKS HORN P
P. coronopus

3. PLANTAIN SHOREWEED
Littorella lacustris

Pl. 178.

and on inland places. It bears in June and July a slender spike with very conspicuous yellow anthers, on a stalk about four or five inches high. The leaves vary much in size and degree of downiness. Though they have a peculiar, and to us a very disagreeable flavour, yet they were formerly used in salads.

2. SHORE-WEED (*Littorélla*).

Plantain Shore-weed (*L. lacústris*).—Fertile flowers sessile; barren flowers on stalks; leaves all from the root, linear, fleshy, somewhat channelled; perennial. This Shore-weed would remind us by its slender succulent leaves of the sea-side plantain; but, as its flowers develop themselves, we find them very unlike those of that genus. The solitary barren flowers are raised each on a stalk from two to four inches long; they are greenish-white, cup-shaped, with very long stamens and generally erect. The fertile flowers are seated among the leaves which surround the stalks of the taller flowers, and bear long styles. The blossoms expand in June, and the leaves, which are all from the root, are about two inches in length. The plant, though not generally distributed, is locally abundant on moist sandy and stony places, and is very plentiful on the margins of the Highland lakes, where it forms quite a turf.

Sub-class IV. MONOCHLAMYDEÆ.

Flowers with a single perianth; that is, having a calyx or corolla or neither, but never with more than one floral covering. In this sub-class it is sometimes doubtful whether the leaves which inclose the stamen and pistils should be called a calyx or a corolla: hence the word "perianth" is used to denote either the sepals or petals, which inclose the organs of fructification.

Order LXVIII. AMARANTHACEÆ—AMARANTH TRIBE.

Perianth 3—5-parted, chaffy, not falling off; stamens 3—5, opposite to the segments of the perianth; ovary free, 1-celled; style 1 or none; stigma simple or compound; capsule membranaceous, 1-celled. This order, which is closely allied in characters to the following, differs from it in habit. It consists of herbs and rarely of shrubs, with leaves without stipules. Several of the species are used as pot-herbs.

AMARANTH (*Amaránthus*),—Pistils and stamens in separate flowers on the same plant; perianth 3—5-parted; stamens 3—5; styles 3; capsule 1-celled, 1-seeded, bursting transversely. Name from *a*, not, and *maraino*, to fade, on account of the lasting nature of the flower of some of the species.

AMARANTH (*Amaránthus*).

Wild Amaranth (*A. blítum*).—Flowers 3-cleft with 3 stamens, in small axillary clusters, the segments very obtuse; leaves on long stalks, inversely egg-shaped, narrowed at the base; perianth as long as the bracts; stem diffuse, angled and furrowed; annual. This plant is not truly wild, and only half naturalized, being found occasionally on low waste grounds about

London and Cambridge, and in Huntingdonshire, on heaps of refuse near houses. It bears its small greenish flowers in July, but it has little claim to the name of the "undying one," which was won for the genus by some of the handsome garden species, and some of which, as Prince's Feathers, are very generally cultivated. The common *Amaranthus caudatus*, the Flower Gentle of the old writers, excited the greatest delight on its introduction into the British garden. Gerarde, who says that it far exceeded his powers of description, adds, "and I think the pensile of the most curious painter will be at a stay when he shall come to set him down in his most lively colours."

Most of the species of Amaranth abound in a mild nutritious substance which fits them for edible vegetables, and our wild Amaranth or Strawberry Blite, as it is often called, is, in Gascony, boiled and eaten. The little red fruits, something like strawberries, but of a deeper crimson, are ripened on the plant by the end of August. They are very juicy, and stain the fingers with their red hue. They were formerly used by cooks in colouring puddings.

The names of Blitum and Blite are derived from the Celtic *blith*, insipid. The French call the plant *Blète;* the Germans, *Beermelde;* the Italians, *Blito.*

Order LXIX. CHENOPODIACEÆ—GOOSEFOOT TRIBE.

Perianth 3 to 5-lobed, not falling off; stamens 5, rarely 1 or 2, from the base of the perianth and opposite its lobes; ovary 1-celled, superior or adhering to the tube of the perianth; styles 2 or 4, rarely simple; stigma undivided; fruit 1-seeded, inclosed in the perianth, which often becomes enlarged or fleshy. The order consists of shrubby or herbaceous, mostly succulent plants, with inconspicuous flowers. Some of the species have flowers with pistils only, others with stamens only, and others bearing both pistils and stamens. They are common in most climates, especially on the sea-coast. They are divided into four groups:—

I. The True Goosefoot Group (*Chenopodieæ*).

Flowers mostly perfect; stem without joints.

1. Beet (*Béta*).—Perianth deeply 5-cleft; stamens 5; stigmas 2—4; fruit 1-seeded, adhering to the tube of the fleshy perianth. Name from the Celtic *bwyd*, or *biadh*, food or nourishment, many species being nutritious.

2. Goosefoot (*Chenopódium*).—Flowers all perfect; perianth deeply 3 to 5-cleft, remaining unaltered, and finally closing over the single seed; stamens 2—5; stigmas 2—3. Name from the Greek *chen, chenos*, a goose, and *pous*, a foot, from the form of the leaf in some species.

II. The Orache Group (*Atripliceæ*).

Flowers imperfect; stem without joints.

3. Orache (*Atriplex*).—Stamens and pistils mostly in separate flowers sometimes united; barren flower, perianth deeply 3—5-cleft; stamens 3—5; fertile flower, perianth of 2 valves; stigmas 2; fruit 1-celled, covered by

1. WILD AMARANTH
   Amaranthus blitum.
2. BEET
   Beta vulgaris.
3. STINKING GOOSEFOOT
   Chenopodium olidum.
4. MANY SEEDED G
   C. polyspermum.

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the enlarged perianth. Name from the Greek *a*, not, and *trephein*, to nourish.

III. The Glasswort Group (*Salicornieæ*).

Flowers perfect; stem jointed.

4. Glasswort (*Salicórnia*).—Perianth top-shaped, fleshy, undivided; stamens 1—2; styles 2, very short; stigma 2-cleft; fruit inclosed in the dry swollen perianth. Name from *sal*, salt, and *cornu*, a horn, from the alkaline salt abounding in the plants, and from its horn-shaped branches.

IV. The Sea-Blite Group (*Suædeæ*).

Flowers usually perfect; stem without joints.

5. Sea-Blite (*Suæda*).—Perianth 5-cleft, without a wing at the back; stamens 5; style 2; flowers with two bracts at the base. Name from *suæd*, the Arabic appellation of another of the species.

6. Saltwort (*Sálsola*).—Perianth 5-cleft, with a wing at the back; stamens 5; stigmas 2 to 3, long. Name from *sal*, salt.

1. Beet (*Béta*).

Common Beet (*B. vulgáris*).—Stems erect or prostrate, angled, branched; leaves egg-shaped, narrowed into a leaf-stalk; spikes long, narrow, somewhat erect, leafy, panicled; flowers 2 or 3 together, sessile; segments of the perianth with entire keels; perennial. This is a very common sea-side plant in England, as well as in some southern districts of Scotland. It grows on sea-cliffs, sea-beaches, muddy shores, and also in salt marshes, not of the sea only, but of some rivers, which, like the Medway, in Kent, partake of the saltness of the sea. It has a tall succulent stem, often two feet high, sometimes prostrate below, and afterwards ascending; and its leaves, which are in summer of a rich deep uniform green, vary in autumn to the most beautiful shades of crimson and purple. As some of the foliage retains its rich verdant hue, the plant exhibits the most lovely tints just when vegetation in general is assuming the "sere and yellow leaf"; and the rich crimson seems to the author to be deeper and more general when the plant is growing on the chalk cliff, than when on the muddy shore or salt marsh. The leaves are thick, succulent, glossy, and waved; the lower ones on stalks, the upper ones on the flowering stem. There is nothing attractive in the flowers, which from June to September grow in leafy spikes, the numerous small green blossoms being arranged about two together, with a small pale green leaf at the base of each flower or pair of flowers. The root is large, thick, and fleshy, and has a sweetish flavour.

Large quantities of this Sea-Beet are to be found on many shores, as on those of Dover; and it is sometimes gathered and carried about for sale, but is not valued as it deserves to be. The author, who has tested the worth of several plants used by our forefathers, either as boiled vegetables, or as salad herbs, has found many of them little suited to the palates long accustomed to the cultivated vegetables now so common; but the Sea-Beet deserves all

ts old commendations, and forms a truly excellent dish, not at all inferior to garden spinach, and perfectly wholesome.

Many botanists consider that our Beet is the wild form of the cultivated Beet; hence the same name, *B. vulgaris*, is given to it. There are some, however, who, like Mr. Babington, having doubts of its identity with that plant, retain the name given by Linnæus to our native species, of *B. maritima*. The cultivated Beet is a native of Southern Europe, and a well-known culinary root, ornamenting the dish of salad with its deep red slices, and eaten besides, either pickled or boiled. It has, too, been candied, to form a sweetmeat, and has been used as a substitute for coffee. It also yields sugar, though this seems to be furnished more abundantly by some other species of Beet. The French call the Beet *Bette*, or *Betterave;* the Dutch, *Biete;* and the Italians, *Bieta*. The white Sicilian Beet (*B. sicula*) is extensively cultivated in Switzerland and Germany. Its leaves are used as spinach, and their stout midribs and foot-stalks, called "chards," are boiled and eaten like asparagus. The mangel-wurzel of our fields is a species of Beet, and from its size and highly nutritive quality it obtained this name, which signifies "root of scarcity."

2. Goosefoot (*Chenopódium*).

* *Leaves undivided.*

1. Stinking Goosefoot (*C. ólidum*).—Leaves egg-shaped, with a wedge-shaped base, entire, mealy; flowers in leafless dense spikes; stem spreading; seed shining, black, slightly rough, very small; annual. This plant was called by old writers Stinking Arrach, and Dog's Arrach. Few of our native plants possess so disgusting an odour; indeed, with the exception of some species of fungus, it is unrivalled in this respect. The leaves are small and stalked, and feel to the touch as if greased, while a powdery substance is thickly scattered over their surface. When the foliage is handled, we become more conscious of the odour of putrid fish existing in this powder; and M. Chevalier has discovered a circumstance in this plant unknown in any other, which is, that it disengages ammonia during vegetation. When the plant is distilled along with a solution of common soda, a volatile alkaline substance of a strong fishy odour passes off, which has been called by chemists *trimethylamine;* and it is very remarkable, that if herring brine be distilled in the same way, along with soda, the same volatile substance passes off in still greater abundance than from the Goosefoot. Professor Johnston remarks on this: "In a living and growing plant, therefore, and in the substance of dead and decaying fish, one and the same chemical compound is naturally produced, and imparts to each the same well-known and offensive odour, for which it is everywhere remarkable. The history of this substance, *trimethylamine*, presents also an interesting illustration of the way in which chemistry throws light on natural phenomena. It was formed and obtained in the laboratory by special chemical processes, and its peculiar properties ascertained before it was extracted, either from the evil-smelling plant, or from the decaying fish. It was the smell of the artificial compound which suggested first that it might possibly be the cause of the repulsive

1 UPRIGHT GOOSEFOOT
Chenopodium urbicum

2 NETTLE LEAVED G
C. murale

3 MAPLE LEAVED G
C. hybridum

4 WHITE G
C. album

Pl. 180.

odour of the living plant, and afterwards of that of the dead animal. Subsequent researches showed the correctness of these conjectures, by actually extracting it from both. As is the case with some of the natural vegetable perfumes, therefore, we can now prepare by art the stinking constituents of the Goosefoot, should their production ever be likely to lead to profit." The Professor suggests that it may probably be used for some of those fishy-smelling compounds used at table, such as anchovy sauce; or may be employed by the cook in giving a flavour to imitate that of oyster patties, or similar dishes, usually made of lobster, crayfish, shrimps, or other crustaceans.

This Goosefoot grows on waste places, about walls, and by road-sides, especially in the neighbourhood of the sea. It was once highly valued for the antispasmodic medicine furnished by its juices, and it is still used in country places for this purpose; whilst some years ago it was cultivated in the herb gardens of Surrey, and annually sold in Covent-Garden Market for its medicinal uses. Its small green blossoms grow in dense spikes, in August and September, and the whole plant is very succulent. It is also known under Linnæus' name *C. vulvaria*.

2. **Many-seeded Goosefoot** (*C. polyspérmum*).—Leaves egg-shaped, sessile; flowers in branched, axillary, somewhat slender spikes; annual. This is the *C. acutifolium* of some botanists. The spikes of flowers are very variable, and sometimes leafy and leafless on the same plant. This Goosefoot is found, but not very commonly, in damp waste places, and cultivated ground. It varies from four inches to a foot in height; and the leaves have usually a good deal of redness. The flowers, which appear in August and September, are greenish, or tinged with red, and are rendered pretty by their numerous shining seeds, which are deep brown, minutely dotted, and are not concealed by the perianth.

* * *Leaves toothed, angled, or lobed.*

3. **Upright Goosefoot** (*C. úrbicum*).—Leaves triangular, toothed, or nearly entire, their base contracted into the leaf-stalk; spikes erect, nearly leafless, compound; seeds very minutely rough, blunt at the edge; annual. A variety of this plant occurs having leaves with short triangular teeth; and a common form, sometimes called *C. intermedium*, has large acute teeth. The Upright Goosefoot is found on waste places near walls, and about towns and villages, in many parts of the kingdom, though it is scarcely wild in Scotland. The leaves are large, of a pale almost glaucous green tint, and in the common form deeply and irregularly toothed. The flowers grow in spikes in August and September, and are pale green, and the seeds are almost as large as rape seeds. Dr. George Johnston, remarking some years since on this plant, says, "It is interesting as the subject of a strange story, which purports that this weed could, by cultivation, be turned into a real strawberry, and relative to which there is a curious letter from the hapless Josephine to her gardener in her Memoirs."

4. **Nettle-leaved Goosefoot** (*C. murále*).—Leaves shining, egg-shaped, somewhat rhomboid, acute, sharply toothed, entire at the base; flowers in spreading, branched, leafless cymes; seeds minutely granulated, acutely

keeled at the edge; annual. This species, which grows on waste places near towns and villages, has shining leaves, and bears greenish spikes of rather distant flowers, during August and September. It has an unpleasant odour, but not of the same nature as that of the Stinking Goosefoot; and its seeds are much smaller than those of the last species. It is rare in England, more so in Ireland, and absent from Scotland.

5. **Maple-leaved Goosefoot** (*C. hýbridum*).—Leaves somewhat heart-shaped, with angular, large, distant lobes; flowers in crowded, panicled, leafless cymes; seeds dotted, their edge blunt and not keeled; annual. This is not a common plant, but it occurs in waste places and cultivated fields south of Lancashire, and some other places. It flowers in August, and has slender stems and large leaves, with an unpleasant odour. This plant was said by Tragus to be deleterious both to men and swine; but this is very doubtful, as the Goosefoots are a very harmless family of plants.

6. **White Goosefoot** (*C. álbum*).—Leaves egg-shaped, somewhat rhomboid, deeply toothed, entire below; upper ones lanceolate, nearly entire; flowers in branched, dense, nearly leafless spikes; seeds smooth and shining, bluntly keeled at the edge; annual. In one form of this plant the leaves are covered with a whitish mealy substance, and the upper part of their margins is bluntly toothed, while another variety has green and almost entire leaves, and is the *C. viride* of Linnæus. This is the most common of all the Goosefoots, and grows in waste places near houses, and in cultivated fields. Its stem is from one to three feet high, and it bears from July to September clustering spikes of greenish flowers. The fleshy leaves were formerly boiled as greens, but they are probably little used now, as they form but an insipid dish, decidedly inferior to that made of the common nettle. The mealy substance on their surface suggested the name of White Goosefoot for this plant, which is in France called Silver-weed (*L'anserine*). The Germans call it *Gänsefuss;* the Dutch, *Ganzevoet;* and the Danes, *Guasefod.*

7. **Fig-leaved Goosefoot** (*C. ficifólium*). — Leaves thin, stalked, unequally 3-lobed, from a wedge-shaped base, lobes ascending, middle lobe elongated, toothed, blunt, upper leaves linear-lanceolate and entire; flowers in erect nearly leafless racemes; seeds shining, dotted, the edge blunt, and not keeled; annual. This species is found on waste places and heaps of refuse about London and Yarmouth, flowering in August and September. The seeds are smaller than in *C. álbum.*

8. **Oak-leaved Goosefoot** (*C. glaúcum*).—Leaves all oblong, toothed and cut at the margin; flowers in erect, nearly simple, leafless spikes; seeds very minute, reticulated, acutely keeled at the edge; annual. This plant grows rarely on sandy soils in waste places in several parts of the kingdom, but is a native only in the south of England. It has a spreading, often prostrate, stem, and greenish flowers in August. The leaves are mealy beneath.

9. **Red Goosefoot** (*C. rúbrum*).—Leaves triangular, somewhat rhomboid, toothed, and serrated; spikes erect, dense, compound, leafy; seeds very minute, smooth, shining, blunt, and slightly keeled at the edge; annual. A form of this plant with triangular leaves, somewhat toothed, prostrate stems, and its minute shining seeds acutely keeled at the edge, is by some writers

1. PIG LEAVED GOOSEFOOT
Chenopodium ficifolium.
2. OAK LEAVED G.
C. glaucum.
3. RED G.
C. rubrum.
4. MERCURY G.
C. bonus-henricus.

Pl. 181.

considered a distinct species, and called *C. botryodes*. It is found on waste ground near the sea in Cornwall, Suffolk, and Northumberland. The common Red Goosefoot is quite a frequent plant of salt marshes in England, and grows also near houses and about walls, but it is rare in Ireland. Its stem is erect, about a foot high, and generally reddish, as are also the thick compound spikes, which are numerous on the plant in August and September. The flowers are generally incomplete, and the stamens one or two.

10. **Mercury Goosefoot, or Good King Henry** (*C. bónus-henrícus*).—Leaves halberd-shaped, triangular, mostly entire; spikes compound, terminal and axillary, erect, leafless; stigmas elongated; seeds smooth and shining; perennial. This is a dull-looking dark green succulent plant, about a foot high, with spikes of dull green flowers in August, and large rather thick leaves. The leaves when boiled form a tolerably good vegetable, resembling spinach; and the plant was of old times much cultivated in gardens, and was so very generally a few years since, in the cottage plots of Boston, in Lincolnshire. Though hardy and of early growth, it scarcely affords such an amount of nutriment as would have merited its name; but this was given at a period when good edible vegetables were fewer. One of the Goosefoots of Peru (*C. quinoa*), called by the people Petty Rice, is a most important vegetable of that land. Its leaves form a common dish when boiled, but it is the small round, nutritious seeds which are of greatest value, and the flour or meal yielded by them is very similar to oatmeal. On the high table-lands of Peru and Chili this Goosefoot is extensively cultivated, growing at an elevation at which neither barley nor rye would ripen. Professor Johnston remarks of this plant, that it is still the principal food of the people who occupy these high lands, and that before the introduction of European grains by the Spaniards it probably formed the chief nourishment of the Peruvians. "A grain so nutritious," says this writer, "is a very precious gift to the inhabitants of the elevated regions of the Andes. Without it these lofty plains could only be runs for cattle, like the summer pastures among the valleys of the Alps."

Our Good King Henry has ceased to be regarded as an important vegetable, though it is still occasionally boiled by cottagers. It is a common plant by waysides, and in waste places, and often grows among the broken archways and walls of old ruins.

3. Orache (*Atriplex*).

1. **Shrubby Orache, or Sea Purslane** (*A. portulacóides*).—Stem shrubby; leaves inversely egg-shaped, lanceolate, entire, narrow below; fruiting perianth, not stalked, inversely triangular, rounded below, with 2 to 4 unequal lobes above, and covered at the back with sharp points; perennial. This is a plant having a woody stem, and foliage of silvery whiteness and much succulence. It is a low shrub or trailer, and it is not uncommon on the seashore, on muddy or marshy soils of England, and is found rarely in Ireland. It is often grown in gardens in pots. It is from one to three feet high, and bears axillary spikes of small yellowish-green flowers from August to October, but, like all the Oraches, is most readily distinguished from the

other species when in fruit. When planted in the garden it requires to be placed in a gravelly soil. Its leaves make a good pickle.

The different species of Atriplex, like many of our seaside plants, are remarkable for the white or bluish mealy powder which covers them, so that they may be completely immersed in water without being wetted. The Halimus Orache, or Sea Purslane, so common in the hedges of Southern Europe, has a still more mealy surface than this, and is a larger shrub. Mr. Backhouse tells us that this plant is, in Australia, commonly called Botany Bay Greens, from having been very useful some years since, during a season of scarcity in that land. Some writers include our Shrubby Purslane and the following species in a distinct genus, called Obione.

2. **Stalked Sea Orache** (*A. pedunculáta*).—Stem herbaceous, zigzag, branched; leaves inversely egg-shaped, entire, narrowed below, upper leaves narrower; fruiting perianth long-stalked, bell-shaped, 2-lobed, with a small intermediate tooth; annual. The Oraches are generally difficult of distinction, and botanists differ as to their arrangement into species, but the Stalked Sea Orache is readily distinguished by its long flower-stalks, and the turned-back lobes of the perianth. It varies much in size, and is dwarf or luxuriant according to the degree of moisture in the soil. It grows on muddy shores and salt marshes in the east and south-east of England, and is found in several parts of Kent, Suffolk, Norfolk, Lincolnshire, and other counties, but is a rare plant.

3. **Frosted Sea Orache** (*A. laciniáta*).—Stem herbaceous, spreading, prostrate; leaves triangular, somewhat rhomboid, cut, mealy beneath; spike of sterile flowers dense, leafless; fertile flowers axillary; perianth of the fruit rhomboid, 3-lobed, the back 3-ribbed, and often tubercled; seeds rough, opaque; annual. This plant, which is the *A. farinosa* or *A. arenaria* of some botanists, is not unfrequent on the seashore, and is characterized by its buff stem. It is a very silvery plant, every part of it being powdered with white. The flowers appear in July and August, and the perianth of the fruit is very large and broad.

4. **Spreading Halberd-leaved Orache** (*A. pátula*).—Stem herbaceous, erect, or spreading; lower leaves triangular, halberd-shaped, with two horizontally-spreading lobes, irregularly toothed, the upper ones nearly entire; perianth of the fruit toothed or entire at the margin, slightly tubercled on the back; spikes nearly simple, interrupted; seeds mostly dark-brown, wrinkled; annual. This is a common species on cultivated and waste lands, and often very abundant on salt marshes. It has straggling furrowed branches, and its flowers, which appear from midsummer to autumn, are in small clusters, on long, interrupted, and axillary spikes, and often much tinged with red. The main stem is usually erect, and the others prostrate. The perianth of the fruit is variable, there being two kinds in each spike. The authors of the "British Flora" remark, "that those below are larger, with a dark brown wrinkled seed; those towards the extremity smaller, with a black, shining, perfectly smooth seed." This species is by Sir J. E. Smith, Mr. Babington, and others, termed *A. hastata*.

5. **Spreading Fruited Orache** (*A. rósea*).—Stem spreading, procumbent or ascending, with spreading branches; leaves mealy, egg-shaped, tri-

1. SHRUBBY ORACHE.
Atriplex portulacoides.
2. STALKED SEA O.
A. pedunculata.
3. FROSTED SEA O.
A. laciniata.
4. SPREADING FRUITED O.
A. roseа.

angular, somewhat 3-lobed, unequally cut and toothed; upper leaves lanceolate, toothed, and often 3-lobed at the base, or nearly entire; perianth of the fruit rhomboid, acute, toothed, with two irregular rows of tubercles on the back; spikes axillary and terminal, few-flowered; seeds tubercular, rough; annual. This is a common plant of the seashore, and is by some botanists considered a sub-species of *A. patula*. Mr. Babington, however, who thus describes the plant, considers it truly distinct, and Mr. Woods has called the species *A. babingtonii*, after that excellent botanist.

6. **Triangular-leaved Orache** (*A. deltoidéa*).—Stem mostly erect; lower leaves halberd-shaped and triangular, unequally toothed; perianth of the fruit entire or toothed, usually covered on the back with sharp points; spikes nearly simple, forming a branched, many-flowered panicle; seeds all shining, smooth; annual. In one variety of this plant all the leaves are halberd-shaped and triangular, the perianth toothed and covered with spines, and the stem and branches all erect or ascending. A very rare variety occurring on the sea-coast has prostrate stems and branches, its upper leaves lanceolate and entire, and the spikes only slightly branched. This is the *A. prostrata* of some botanists. The first described form of the Triangular-leaved Orache is not infrequent on waste and cultivated ground, flowering from July to October. The seeds are black and wrinkled, not half so large as the larger kind of *A. patula*, but similar to the smaller seeds of the spike of that plant.

7. **Spreading Narrow-leaved Orache** (*A. angustifólia*).—Stem erect or prostrate, upper leaves lanceolate, almost entire, the lower ones with two ascending lobes from a wedge-shaped base; seeds smooth and shining; annual. In one form of this plant the perianth of the fruit is rhomboidal with ascending lateral angles, entire, smooth on the back, and the spikes interrupted and nearly unbranched; in another, the lower leaves are deeply cut and toothed; the perianth of the fruit also toothed, and usually tubercled at the back, and the spikes dense and many-flowered. The last variety is the *A. erecta* of some writers, and the species, in all its forms, is thought by some botanists to be but different states of the *A. patula*. This plant is not unfrequent on cultivated and waste ground. It was one of the species most frequently in former days boiled for spinach, and its foliage is perfectly wholesome, though the seeds are said to be emetic. The Orache was in former times commonly called Arrach; and Parkinson says of the plants, "There are many dishes of meate made of them, while they are young; for, being almost without savours of themselves, they are the more convertible into what relish anyone will make them with sugar and spices," etc. The garden species, *A. hortensis*, which is a native of Tartary, was once very generally cultivated in this country, for the table, and was called Orach, Orage, or Mountain Spinach. An old writer says, "It is so commonly known to every housewife that it were labour lost to describe it:" but some old medical writers considered that its use caused pallor and dropsy. Either the wild or cultivated kind was considered as an excellent outward application to inflamed throats, and the decoction was commonly prescribed in cases of jaundice. The garden Orache is still cultivated in Paris, and used as we use spinach. The French call the plant *Arroche*; the Germans and Dutch,

Melde; the Italians, *Atrepice;* the Spaniards, *Armuelles,* and the Russians, *Lebeda.* The *A. hortensis* is sometimes found in uncultivated places, as about Saffron Walden; but has, doubtless, escaped from some old garden.

8. **Grass-leaved Sea Orache** (*A. littorális*).—Stem erect; leaves lanceolate, entire, or toothed; perianth of the fruit toothed, covered at the back with short points; annual. In one form of this plant the leaves are very narrow and entire, and the perianth of the fruit is egg-shaped, rhomboid, acute, toothed and tubercled on the back, with spreading points. This is readily distinguished by its open, pointed perianth. In the form often described as *A. marina,* the leaves are egg-shaped and lanceolate, irregularly toothed or rarely entire, and the perianth of the fruit is inversely heart-shaped and triangular, blunt, toothed, tubercled on the back, and closed. Both forms are common in salt marshes. The perianth of the fruit is very remarkable, being among the largest of the British species, and opening like a bivalve shell. Within this tubercled green covering lies a large seed, shaped like a bean. The plant is chiefly found on the eastern coasts of this kingdom. The under parts of the leaves are mealy, as are also the flowers, which grow in rather crowded, axillary and terminal spikes from July to September.

A very large coarse species, the Shining-leaved Orache (*A. nitens*), has been found by Dr. Bromfield on the sea-shore at the Isle of Wight. It is a common plant in the east of Germany, but must be regarded as an accidental one on our own coast. It has an erect, branched stem, with triangular pointed leaves, which are shining on the upper surface, and glaucous beneath, the lower leaves becoming heart-shaped and halberd-shaped, while the upper are elongate and triangular. The perianth of the fruit is egg-shaped, tapering at the point, entire, smooth on the back, thin and finely reticulated, and opening to the base.

4. Glasswort (*Salicórnia*).

1. **Jointed Glasswort** (*S. herbácea*).—Stem herbaceous, joints compressed, rather thickened upwards; spikes cylindrical, tapering, stalked; annual. In the usual form the stem of this plant is erect; but in one, sometimes described as *S. procumbens,* the stem is prostrate. The Glasswort is a singular plant, very abundant in our salt marshes, and though its flowers are inconspicuous, and it has no leaves, yet it is truly ornamental to the grassy plain. Its height is from four to eight inches, and its texture succulent. The stem is formed of numerous fleshy tubes, which are smooth, and almost as clear as if they were cut out of green glass; but the plant loses all its beauty in the herbarium, where it shrivels up. The spikes of flowers are jointed like the stem, bearing at the base of every short joint a cluster of three green flowers, each of which contains one or two stamens. These appear in August and September. The perianth of the fruit has a narrow circular wing, and the seed is about twice as long as it is broad.

Both this and the next species abounding in soda, the plants received the name of Glasswort from their old use in the manufacture of glass, a use now superseded by the later discoveries of chemistry. The plant is the *Glasschmalz* of the Germans; the *Zoudkruid* of the Dutch, and is called in France,

1 SPREADING HALBERD LEAVED ORACHE.
Atriplex patula

2 TRIANGULAR L. O.
A. deltoidea

3 SPREADING NARROW L. O.
A. angustifolia

4 GRASS LEAVED SEA O.
A. littoralis

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Salicorne, and in Denmark, *Salturt*. The French also term it *Crestemarine*; and people living near our salt marshes generally call it Samphire. It is gathered, while in flower, and pickled like the true Samphire, to which, however, it is very inferior. Our native species, like the other succulent sea-side plants, have a saline juicy flavour. They are much relished by cattle, and combine with the sea-air to invigorate them greatly. The salt plants in some parts of Australia are very numerous, and are of great value to the farmers. Sir J. L. Mitchell, referring to the highlands near Sydney, says, "On the salt plains in these places Nature amply provides for this taste of the large herbivorous animals for salt. Our sheep nibbled at the mesembryanthemums, and the cattle ate greedily of various bushes whose leaves were salt to the taste. The colour of the leaves of such bushes was generally of a light bluish-green, and there were several species. That with the largest leaves was called by Dr. Brown Salt-bush. It was the *Rhagodia parabolica*." When the salt was removed from this plant, the latter proved to be a very useful vegetable food for man. This was accidentally discovered in the course of some experiments instituted by Mr. Stephenson for ascertaining the proportion of salt contained in the foliage. It was then found that the leaves after twice boiling yielded as much as a twentieth part of salt, nearly two ounces having been obtained from two pounds of leaves. Cattle flourish exceedingly on land where this plant grows.

Our Glasswort is sometimes called Sea-grass, Crab-grass, or Frog-grass.

2. **Creeping Glasswort** (*S. radicans*). — Stem woody, prostrate and rooting; joints compressed, scarcely thickened, notched at the top; spikes oblong, blunt; perennial. This is a rare plant, inhabiting the muddy sea-shore, and is found on some parts of the Norfolk, Sussex, and Kentish coasts, flowering in August and September. It differs from the last species in its prostrate, rooting stem, in its broader seed, and also in its sessile spikes of flowers. Mr. Babington remarks, that in the Jointed Glasswort the middle flower of the three is always the highest, but in this species it is scarcely higher than the others.

5. Sea-Blite (*Suæda*).

1. **Shrubby Sea-Blite** (*S. fruticósa*). — Stem erect, shrubby; leaves semi-cylindrical, blunt; styles 3; seeds smooth and shining, vertical; biennial. This is a rare plant, inhabiting the south and east coasts of England. It has a stem about three feet high, with many straight leafy branches, and axillary green flowers, growing in small clusters from July to October. It has been by various writers included in the genus *Chenopodium*, *Salsola* or *Schoberia*.

2. **Annual Sea-Blite** (*S. marítima*).—Stem herbaceous; leaves acute, semi-cylindrical; styles 2; seeds horizontal, reticulated; annual. This is a very common plant, much smaller than the foregoing, and often growing on marshes as well as at the base of cliffs and sea-walls, and about boat-yards near the sea. It has small greenish flowers from July to October, either one or two growing in the axils of the leaves, and two small acute bracts placed beneath each. It is a succulent plant of a glaucous green hue, often much tinted with red, and of a saltish flavour. The stem is usually about a foot

high, and sometimes erect, but more often the stem and branches spread over the ground. The seed in this species of Sea-Blite is horizontal, and this is a distinction of importance.

6. SALTWORT (*Salsóla*).

Prickly Saltwort (*S. káli*).—Stems herbaceous, prostrate; leaves awl-shaped, spinous, rough; flowers axillary, solitary; segments of the enlarged perianth cartilaginous; annual. This is an easily recognised plant, with its rich green, prostrate, branched, angled stem, and its succulent awl-shaped leaves, terminated each by a prickle. The green, sessile, solitary flowers appear in July, having at the base of each three leaf-like bracts. The fruit of this plant is a very interesting and curious object under the microscope. It is deeply set between three angular spinous leaves; the perianth opens into five cartilaginous valves; the covering of the seed is tough and membranous, and from the base of this spring the stamens. This Saltwort seems very general on sandy shores throughout the world, and is the *Qali* or *Alkali* of the Arabians. Both this and the other species, as well as a large number of other saline plants, yield the barilla of commerce. The alkaline salt furnished by their ashes was, some years since, of great economical importance, and the plants were largely cultivated in the south of France, and on the Mediterranean shores of Spain, especially in the huerta of Murcia. During the wars in the early part of this century, the demand for soda rendered its price in the market very high, and the growers of the Salt-wort endeavoured to cultivate the plant at a greater distance from the shore; they soon found, however, that the plan was unsuccessful. So long as the field sloped upwards from the sea, so that the plants were under the direct influence of the sea breeze, the Saltworts abounded in soda, but directly they began to slope inwards, and were in some measure removed from the saline airs and vapours, and from the particles of salt borne by the winds, they failed to secrete soda, and yielded potash.

The French call this Saltwort *La Soude;* and the Germans, *Die Sodapflanze.* It is the *Loogkruid* of the Dutch; the *Soda* of the Italians; the *Sosa* of the Spaniards; and the *Sallyden* of the Danes. It is in country places often called Sea-grape.

Order LXX. SCLERANTHEÆ—KNAWEL TRIBE.

Perianth of one piece, tubular; limb 4—5 cleft; stamens 1—10, inserted into the mouth of the tube; ovary 1-celled; styles 2 or 1; fruit membranous, inclosed within the hardened tube of the perianth; seed solitary. This order consists of small inconspicuous herbs, with opposite leaves, without stipules, and with minute flowers.

KNAWEL (*Scleránthus*).—Perianth 4—5-cleft; stamens 1, 2, 5 or 10; styles 2. Name from *skleros*, hard, and *anthos*, a flower, from the hard nature of the perianth.

KNAWEL (*Scleránthus*).

1. **Annual Knawel** (*S. ánnuus*).—Calyx of the fruit with erect, or erect-spreading, rather acute segments, edged with a narrow white mem-

1. JOINTED GLASSWORT.
Salicornia herbacea.
2. CREEPING G.
S. radicans.
3. SHRUBBY SEA BLITE.
Suæda fruticosa.
4. ANNUAL S. B.
S. maritima.
5. PRICKLY SALTWORT.
Salsola kali.
6. ANNUAL KNAWEL.
Scleranthus annuus.
7. PERENNIAL K.
S. perennis.

brane; stem spreading; annual. Although this plant is very frequent in corn-fields, especially where the soil is of gravel, yet it is noticed by few save the botanist. It is about two or three inches high, with many spreading stems and awl-shaped leaves; and it bears, from July to September, small green flowers, which either grow in the forks of the stems, or form small terminal clusters. The slender stems are light green, slightly downy, and much branched and entangled; the leaves keeled, opposite, and united at the base by a membranous fringed margin. The Swedes are said to allay the tooth-ache by inhaling the steam from a decoction of this Knawel. It is very common in Sweden, where it is called *Tandgrås*. The French term the plant *La Gnavelle annuelle*, and the Germans *Der wilde Knauelle;* while it is known to the Dutch by the name of *Jaarlykys hardbloem*. The latter name is very expressive, as, when in seed, the perianth becomes quite hardened. This Knawel is common throughout Europe on sandy soils. It flowers in July, and scatters its seeds abundantly during autumn. A number of young plants shortly arise, many of which survive the winter; while some of the seeds do not vegetate till the spring following, at which season a fresh set of young plants make their appearance. Both this and the next species often occur on dry gravelly heath-lands.

2. **Perennial Knawel** (*S. perénnis*).—Calyx of the fruit with blunt, closed segments, edged with a broad white membrane; stems prostrate, either simple or irregularly branched; perennial. This plant has pale green stems, and its small greenish flowers expand from August to November, having a variegated appearance from the broad white membrane at the edge. The plant, though not rare, is not very generally distributed. It is not infrequent on the open sandy downs of Norfolk and Suffolk, and is very abundant in the neighbourhood of Elvedon; while in several countries of Europe it is a very common flower. In some lands the roots are attacked by the insect called the Scarlet-grain of Poland (*Coccus polonicus*). This yields a very rich crimson tint, and on this account the plant was once collected in large quantities in the Ukraine, and in Lithuania, for dyeing red. The Coccus is probably still in use for dyeing silk and hair in Turkey and Armenia, as well as for colouring the nails of the women's fingers; but it is not now much used in Europe, except by the peasantry of Poland. A similar insect, found on the roots of the burnet (*Poterium sanguisorba*), was formerly collected by the Moors for dyeing silk and wool of a rose-colour; but this, as well as a Coccus found on the bearberry, is now neglected. The insect feeding on the Perennial Knawel is said sometimes to attack the annual species, and also to infest occasionally the roots of the silverweed (*Potentilla anserina*). Sir J. E. Smith says that he never found the insect on any of these plants in England.

Order LXXI. POLYGONEÆ—PERSICARIA TRIBE.

Flowers often bearing stamens only, or pistils only; perianth deeply 3—6 parted, frequently in two rows; stamens 5—8 from the base of the perianth; ovary 1, not attached to the perianth; styles 1—3; fruit a flattened or triangular nut. This order consists of herbaceous, rarely shrubby plants,

bearing alternate leaves, having at the base membranous sheathing stipules. The stems and leaves are acid or astringent, the roots usually nauseous and medicinal; while the seeds are farinaceous and esculent. A few are handsome plants, but many, like the dock, would be rather regarded as weeds. The true rhubarb is contained in this order.

1. PERSICARIA (*Polygonum*).—Perianth deeply 5-cleft, not falling off; stamens 5—8; styles 2 or 3; fruit a triangular or flattened nut. Name from *polys*, many, and *gonu*, a joint, from the much-jointed stems.

2. DOCK (*Rúmex*).—Perianth deeply 6-cleft, in two rows, the interior segments large; stamens 6; styles 3; fruit a triangular nut, covered by the enlarged inner perianth. Name of unknown origin, used by the Romans for these plants.

3. MOUNTAIN SORREL (*Oxýria*).—Perianth deeply 4-cleft, in two rows, the interior segments large; stamens 6; styles 2; fruit a flattened nut, with a membranous wing. Name from the Greek *oxys*, sharp, from the acid flavour of the stems and foliage.

1. PERSICARIA, BISTORT, KNOT-GRASS, AND BUCKWHEAT (*Polygonum*).

1. **Common Bistort or Snake-weed** (*P. bistórta*).—Stem simple, erect, bearing a single dense spike; leaves egg-shaped, somewhat heart-shaped, waved, the lower ones on winged stalks; perennial. The Bistort is common on moist grassy places, and is, from June to September, a handsome plant, bearing a cylindrical spike of small flesh-coloured flowers. The stem is a foot or a foot and a half high; the upper leaves have long sheaths, and the flowers are on short footstalks, with bracts at their base. The name of Bistort originated in the twisted form of its large root, or, rather, underground stem. This is black on the outside, and red within, and is one of our most powerful vegetable astringents. It contains in abundance both tannin and gallic acid, and is a good tonic medicine; and as the tannin is found, by M. Haemstaedt, of Berlin, to be twice as strong as that of oak-bark, the root might be well employed in the preparation of leather. Both the leaves and roots were believed by the old herbalists to have "a powerful faculty to resist all poison," and to be very useful in the plague, and other forms of pestilence; the root also was, and still is, in country places, used as a cure for toothache; and a decoction of the leaves or the powdered root was considered a good outward or inward remedy for wounds. Thus we have Spenser saying—

> "Then whether it divine tobacco were,
> Or panachæa, or Polygony,
> She found and brought it to her patient deare,
> Who all this while lay bleeding out his hart-blood neare."

When the tannin is removed from the root, a starch-like substance remains, which can be used as food; and bread is made in Russia both from this and the root of a Siberian species. The leaves and tender shoots may be boiled for the table; and in the north of England, where the young tops are commonly eaten in herb puddings, they are called Easter-man-giant. It was usual in Manchester a few years since to prepare these leaves in various ways for the daily meal. The plant is there commonly called Patience Dock, and is apparently the herb recommended by M. Soyer, in his very popular book

1 COMMON BISTORT.
Polygonum bistorta

2 VIVIPAROUS ALPINE B
P. viviparum

3 COMMON KNOT GRASS.
P. aviculare.

4 RAY'S E. G.
P. Raii.

5 SEA SIDE E. G.
P. maritimum.

on cookery, as the Sweet Dock, and as forming an excellent dish. Scheele detected oxalic acid in this species. The seeds, like those of the buckwheat, are peculiarly nutritive to poultry. Old herbalists called the plant English Serpentary, Dragon Wort, Osterisks, and Passions.

2. **Viviparous Alpine Bistort** (*P. viviparum*).—Spike lax, with bulbs in the lower part; leaves linear, lanceolate, their margins rolled back, the lower ones stalked; foot-stalks not winged; perennial.

This species, which is not infrequent on mountain pastures in various parts of the kingdom, is abundant in the Highlands of Scotland. It is a slender plant, with a stem six or eight inches high, and narrow, rich green leaves. The flowers, which expand in June and July, are of a pale flesh-colour; and the plant is remarkable for its tendency to propagate itself by bulbs, by means of which it increases rapidly, while it rarely forms perfect seeds. These little bulbs are red, and are placed at the lower part of the spike of flowers, taking the place of blossoms. The roots, which have similar properties to those of the Common Bistort, are eaten in Sweden, Lapland, and Siberia. The plant is a native of very cold countries, and the lemming, which is the smallest quadruped of the Polar regions, feeds chiefly on its roots, though eating also the grasses and vetches which grow beside it.

3. **Common Knot-grass** (*P. aviculare*).—Leaves narrow, elliptical, stalked; stipules short, lanceolate, acute, with few distinct nerves; stem herbaceous; nut about as long as, and covered by, the perianth, marked with lines with raised points; annual. This is not only the commonest species of the genus, but is also one of the most frequent of our wild flowers. Sometimes it troubles the farmer in his cornfields, sometimes it is found among the stones of the beach, or on the cliffs, or the heath or garden-bed; and wherever we find any little mound of earth by the way-side, there we shall see the Knot-grass. It varies much in size and in the form of its leaves, which, though usually blunt, are sometimes pointed, and which are in some cases crowded, in others distant on the stems. The foliage and stems are dark, myrtle green, furnished with chaffy stipules, which finally become torn; and it bears, all the summer, numerous small greenish or pinkish white flowers, which, before expansion, are sometimes of a rich crimson tint. Though usually a straggling, prostrate plant, its stems are sometimes erect, especially if the soil is rich. The knottiness of the stem gave to the plant its old English name, and it is the "hindering Knot-grass" of Shakspere. It appears that its decoction was formerly supposed to prevent the growth of children, as well as of the young of domestic animals. Beaumont and Fletcher allude to this supposed property; "'Twere worse than Knot-grass; he would never grow after it." Notwithstanding this, however, it has always been well known to those who tend sheep, as being not only nutritious to these animals, but much relished by them. Thus, in Milton's "Comus," we find the shepherd saying—

> "This evening late, by then the chewing flocks
> Had ta'en their supper on the savoury herb
> Of Knot-grass, dew-besprent, and were in fold,
> I sate me down to watch upon a bank,
> With ivy canopied, and interwove
> With flaunting honeysuckle."

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The great abundance of seeds furnished by this plant affords a supply to a large number of our wild singing-birds; hence its name *aviculare;* and insignificant as the wayside plant appears, it is of great service in the economy of nature. In some counties it is called Hog-weed, because so much eaten by swine. Thunberg says that, in Japan, a blue dye, resembling indigo, is prepared from this plant; while two exotic species of the genus (*P. chinense* and *P. barbatum*) yield a good dark blue colour.

The leaves of our little Knot-grass seem, of late years, to have been used for another purpose, which may eventually render them of much importance in some countries. The *Diario Mercantile* of Venice mentioned, in the year 1852, a certain Teresa Ramor, who had raised silkworms, and procured silk from them in sixteen days, nourishing them with a leaf very different from that of the mulberry. The writer in this journal adds: "This is the perfect realization of the discovery of Anna Rizzi, who could rear silkworms, even in winter, giving them the leaves of the grass classed by Linnæus under the name of *Polygonum centinodes.*" The *Adriatico* of Venice stated, in addition, that this plant, given to these insects at the same time as the mulberry, was preferred by them. The plant is said to be identical with our Knot-grass.

4. **Robert's Knot-grass** (*P. robérti*).—Leaves distant, elliptic-lanceolate, flat; stipules short, with few nerves; stem prostrate; nut smooth and shining, longer than the perianth; annual. This species is found on sandy sea-shores in the west of England, Wales, and Scotland, and also about Dublin. Its greenish flowers expand from July to September, and are from one to three in number in the axils of the leaves. The stems are long and straggling, and the leaves bend towards the stem. John Ray described this plant as *P. maritimum*, and Mr. Babington, who names it *P. raii*, after that great naturalist, remarks that it resembles *P. aviculare* in habit, but *P. maritimum* in fruit. Its true position is considered by Sir J. D. Hooker to be as a sub-species of *P. aviculare.*

5. **Sea-side Knot-grass** (*P. maritimum*).—Flowers 1—3 together, axillary; leaves crowded, elliptic-lanceolate, fleshy, glaucous, with edges turned under; stipules lanceolate, with numerous branched nerves, at length torn; nut smooth and shining, longer than the perianth; perennial. This is a rare plant, found on the sands of the sea-shore in the Channel Islands, and near Christchurch Head on the shore towards Muddiford, also in Devon and Cornwall. Its prostrate stem is described as woody below, and often much buried; its leaves are convex below, and diverging from the stem. Its greenish flowers appear in August and September.

6. **Common Buckwheat** (*P. fagopýrum*). — Leaves arrow-shaped, somewhat heart-shaped; stem nearly upright, without prickles, branched; angles of the fruit even; annual. The Buckwheat is a rather handsome plant, with an erect, round, wavy stem, much branched, about a foot high, and often of a reddish tinge. During July and August, spreading panicles of pink flowers, having each eight stamens, grow at the top and sides of the stem; and the leaves, which are at first roundish in form, gradually become arrow-shaped, and taper to a long point. Both stalks and leaves remain green even in the driest weather, when almost all vegetation is withered. Though not truly a wild plant, yet it has long been naturalized in this

1. COMMON BUCKWHEAT.
Polygonum fagopyrum.
2. CLIMBING B.
P. convolvulus.
3. COPSE B.
P. dumetorum.
4. AMPHIBIOUS PERSICARIA.
P. amphibium.
5. SPOTTED P.
P. persicaria.

country, and is common as a weed on cultivated lands, or on heaps of refuse and in waste places.

The native country of the Buckwheat is Asia, and it was introduced into Europe about the early part of the sixteenth century, or probably earlier. Its old name of Saracen Corn, and its French name of *Bled noir*, or *Bled Sarrazin*, have led to the belief that it was brought from Asia by the Crusaders; but this inference may be incorrect, for maize, which is an American plant, was long known in some parts of Europe by the name of Turkish Corn. Our name of Buckwheat is derived from the Beech-tree, which is in Germany called *Buche*, or *Buke*, and in Denmark, *Bög;* and it was given from the resemblance of its seeds to the mast of the Beech-tree. In Germany the plant is commonly called *Heidenkorn* (Heath-corn), because it thrives well on dry heathy ground. Beckmann remarks of the Buckwheat, that there is reason to believe this grain must have been common in many parts of Germany in the sixteenth century. In a Bible printed in Low German, at Halberstadt, in the year 1552, entitled "Biblia Dudesch," the translator, who is unknown, renders the passage in Isaiah xxviii. 25, by, "he seyet Bockwete"—he soweth buckwheat. Luther translated it, "He soweth spelt." That Buckwheat was cultivated in England in 1597 is proved by Gerarde's Herbal, and in the latter part of the sixteenth century it is well known to have entered into the food of the poor of France.

Gerarde remarks of the Buckwheat, "It is very common in and about Namptwich in Cheshire, for food for their cattle, pullen, and such like. It likewise groweth in Lancashire and in some parts of our south country, as about London in Middlesex, as well as about Kent and Essex." He calls the plant French Wheat and Bullimony, and says that in France it is termed *Dragée aux chenaux;* and in Germany, *Buckenweide.* The plant is cultivated as bread-corn in China, and in other countries, and is largely grown in some parts of Europe, as in Germany and Holland.

The cultivation of Buckwheat has never been very general in this kingdom, as it is believed not to bear well our spring frosts or winter's cold; but it is a plant of which the crop is soon gathered, and it need not long occupy the land. It has been sown more in the counties of Norfolk and Suffolk than elsewhere, and in these parts of England it is called Brank. Professor James Buckman, who in 1854 related the results of several agricultural experiments, remarks: "I imagine that the oolites would form good soils for the growth of Buckwheat from seeds. I have had little experience of it in an economic point of view; but if found useful, from the facility with which it may be grown, it might become a profitable plant for the corner of a garden or field."

The seeds are the best food that can be given to poultry, and are said to be nutritious to horses. Pheasants are remarkably fond of them. The flour yielded by them is made into bread in other countries, and the farmers of Germany and Holland have various dishes made of it. The hasty puddings prepared with Buckwheat-flour, milk, and sugar, are said to be delicious, and good pancakes are made of this flour. In England it is only used for cakes, pastry, and crumpets; for, though fine and white, its deficiency of gluten renders it less suitable for fermented bread. The flowers are much

liked by bees, and the bee-keepers of Brabant rear the Buckwheat near their hives. The plant yields a good quantity of spirit, and is much used in the manufacture of cordials and liqueurs by the distillers in some parts of Germany. The leaves and stems are eaten by cattle, sheep, and horses.

7. **Climbing Buckwheat** (*P. convólvulus*).—Leaves heart-shaped and arrow-shaped; stem twining, angular; segments of the perianth bluntly keeled, rarely winged; fruit marked with lines, with rough points; annual. This is a frequent and very troublesome plant of the cornfield. Its long stems wind round the stalks of the wheat or other plant, so twisting together the stalks and foliage into one mass, as to prevent further growth, or to bear all down by the weight. Besides this injury, it occupies a large portion of the soil which the agriculturist has prepared at a great cost and labour for the nutriment of the grain, and it sows a prolific crop for the next spring weeding. Its flowers appear in July and August. They grow in axillary spikes, about four together, and are of a greenish-white colour. There is a variety (*pseudo-dumetorum*) with the outer segments of the perianth winged.

8. **Copse Buckwheat** (*P. dumetórum*). — Leaves heart-shaped and arrow-shaped; stem twining, marked with lines; segments of the perianth with a membranous wing; fruit quite smooth and shining on the surface; annual. This is so nearly allied to the winged form of the last species, that it may probably be but a variety. It is, however, generally of a far more luxuriant habit, and has shining seeds. It grows among bushes in the south of England; but it is a rare plant, and one that is seldom found for more than a year or two on the same spot.

9. **Amphibious Persicaria** (*P. amphíbium*).—Flowers in a dense egg-shaped spike, with 2 styles and 6 stamens; leaves egg-shaped, or egg-shaped and lanceolate; or narrowly lanceolate, stalked, rough at the margins; nut smooth and shining; stipules membranous, narrow; root creeping and perennial. This is a very frequent and showy aquatic plant, growing sometimes in ditches or pools, or on their moist boggy margins. It assumes such different forms, according to its place of growth, that its varieties might be taken for distinct species. In one variety, growing in the water, and called *aquaticum*, the leaves are broad and floating, and the spikes oblong; while in the variety called *terrestre* the stems are about a foot high, and the leaves narrow and rough. Both forms of the plant bear very handsome flowers, more like those of our garden Persicaria (*P. orientale*) than those of any other of our wild species. The blossoms appear from July to September; and the more luxuriant form of the plant has stems two or three feet long, which are supported in the water by their long, stalked, floating leaves.

This plant is often very troublesome to those who attempt the draining of moist lands. Its stems run along the soft soil at the bottom of the water, sending out roots at every joint, and they require the attention of the drainer for two or three years; for, if suffered to remain undisturbed for a single season, the alluvial earth will be overrun by the Persicaria. Mr. Loudon, who remarks that no plant, except the Horsetail, is more troublesome on drained lands, says, that many tracts in Scotland, which have been recovered from rivers and estuaries for an unknown series of years, still abound with this plant, and, as under such circumstances it never advances

1. SLENDER HEADED PERSICARIA.
Polygonum laxum.

2. PALE FLOWERED P.
P. lapathifolium.

3. LAX FLOWERED P.
P. mite.

4. SMALL CREEPING P.
P. minus.

5. BITING P.
P. hydropiper.

so far as to produce flower or seed, the individuals must be the same which were formerly suspended in the water. It is quite the prettiest of our wild species of Polygonum. The French call it *Le Persicaire;* the Germans, *Flöhkraut;* the Dutch, *Persenkruid;* the Italians and Spaniards, *Persicaria;* and the Russians, *Potschednaja trawa.* According to Coste and Willemet, the roots in their properties resemble sarsaparilla, and are by the herbalists of Nancy substituted for that drug. These authors add that the apothecaries and druggists of Lorraine prefer them to the true sarsaparilla.

10. **Spotted Persicaria** (*P. persicária*).—Flowers in compact, egg-shaped, oblong, cylindrical, erect spikes, with 2—3 styles, and 5—8 stamens; flower-stalks nearly smooth; leaves lanceolate, nearly sessile, smooth; perianth glandular · nut flattened and swollen at one side, scarcely covered by the perianth; stipules loose, strongly fringed; annual. This plant is very common in moist hedges, and on lands on which moisture has stood. Its leaves are rather large and of a deep green, having usually a dark, blackish, or purplish spot about the middle. This mark is believed by the Highlanders to have originated in a drop of blood which fell from the cross at the time of the crucifixion, and which is supposed to have since been perpetuated on every leaf of the plant. This species bears in July and August numerous spikes of greenish or pinkish white colour, on a stem about one or two feet high; it often occurs as a weed in damp gardens.

11. **Pale-flowered Persicaria** (*P. lapathifólium*).—Flowers in dense, oblong, cylindrical spikes; flower-stalks and perianth glandular and rough; nut flattened, smooth, shining, concave on both sides; leaves shortly stalked, egg-shaped, and lanceolate; lower stipules not fringed, upper ones shortly fringed; annual. The Pale-flowered Persicaria is common in waste places and damp fields, bearing its pale whitish or reddish green flowers in July and August. The stem is a foot or a foot and a half high, with swollen joints, and is sometimes spotted. This is a very variable species, its leaves being often smooth, but in some specimens white with short silky down, and sometimes with a black blotch above. The spikes are lateral or terminal, and the blossoms very crowded; the sepals are shorter than the fruit.

12. **Slender-headed Persicaria** (*P. láxum*). — Flowers usually in elongated slender spikes, with 2 styles and 6 stamens; flower-stalks and perianths glandular and rough; leaves lanceolate, slightly waved, tapering at both ends, glandular beneath; stipules lax, shortly fringed; annual. This species occurs on damp gravelly places in several parts of England. Its stem is often prostrate, and its spikes are usually slender and interrupted, but sometimes short and continuous, with leaves white and woolly beneath. The flowers appear in July and August, and the sepals are larger than the fruit. This is regarded by some authors as a sub-species of *P. lapathifolium;* and it is the *P. laxum* of Babington.

13. **Lax-flowered Persicaria** (*P. míte*).—Spikes erect, thread-like, and interrupted; leaves lanceolate, slightly wavy; stipules hairy and fringed; perianth without glands; nut large, black, compressed, swollen on one side, wrinkled, shining; annual. This species has lax flowering spikes, which are thicker at the upper than at the lower part, and are white or red in colour.

The stem is from one to three feet high, and often much branched. It is a local species, but occurs in many wet places in Yorkshire and southwards from it. The flowers may be found in August and September.

14. **Small Creeping Persicaria** (*P. mínus*).—Spikes erect, thread-like, slender, lax; perianths with glands at the base only; nut small, compressed, black, and shining; leaves linear-lanceolate, flat, very shortly stalked, fringed, without glands; annual. This also is a local plant, occurring on wet gravelly commons in parts of England, and rarely in Scotland and Ireland. It is nearly allied to the next species, but is much smaller, and generally prostrate and rooting at the base, though in some specimens it is erect. In the latter case it has narrower leaves than in the ordinary form. It has upright spikes, and its leaves are always more slender than in the Biting Persicaria.

15. **Biting Persicaria, or Water Pepper** (*P. hydrópiper*).—Flowers in loose drooping spikes, rarely erect; perianth glandular; nut large, compressed, opaque, and dotted; leaves lanceolate, waved; annual. This is an abundant plant in ditches, and on spots where water has once stood. Its drooping, slender spikes of flowers expand during August and September, and are of a pale, reddish-green colour; sometimes, as they grow older, rising erect. The juice of this plant is hot and acrid, but not unpleasant to the taste, and is used by country people to cure pimples on the tongue; the remedy, however, would appear to be as bad as the complaint, for it raises blisters on a delicate skin. The plant was formerly held in great repute, both in this and other countries, for its medicinal properties, but it is rarely used now except by village doctresses, by whom the leaves are sometimes powdered and laid upon the skin, to remove the blackness caused by bruises. A stimulant plaister made of the plant is also applied instead of a mustard poultice; and country people use the leaves as a cure for toothache. The Eastern Persicaria of our gardens is said by Tournefort to have been cultivated in Asia for similar purposes. The acridity of our native plant renders it disagreeable to all our domestic animals, and it is said to prove so obnoxious to insects, that if gathered while in full bloom and laid in wardrobes, it will preserve clothing from the attacks of moths; while, in Germany, it is commonly placed in houses to prevent the annoyance of fleas. Bulliard mentions that the seeds have in country places in France been used as a substitute for pepper. The plant loses much of its acrimony in drying. It will dye wool of a good yellow colour.

Most of our species of Polygonum thrive in damp soils; and Sir T. L. Murray remarks of *P. junceum*, so common in Australia, that he found it an infallible guide to the vicinity of a river, when growing, as it commonly does, in large belts on the grassy plains. Sir Joseph Hooker, too, when in the Himalayas, remarks the abundance of another species on the flats by the riverside. *P. cymosum*, which is a common plant in these regions, affords in its leaves an excellent substitute for spinach. The natives call it *Pullop-bi*; and this traveller records that he has reason to remember its name with gratitude, for he and his party subsisted for five days almost wholly on this plant, though they added to their diet a few nettles, and a small quantity of Sikkim meal.

1. GREAT WATER DOCK.
Rumex hydrolapathum.
2. CURLED D.
R. crispus.
3. MEADOW D.
R. pratensis.
4. GRAINLESS WATER D.
R. aquaticus.

2. Dock and Sorrel (*Rúmex*).

* *Plants not acid; flowers perfect (except R. alpinus).*

1. **Great Water Dock** (*R. hydrolápathum*).—Enlarged sepals egg-shaped, triangular, entire, each with a tubercle on the midrib; leaves broadly lanceolate, acute, tapering below; foot-stalks flat, but not margined above; perennial. This is the largest of all our numerous species of Dock, being commonly three, and sometimes even five, feet in height. It is a handsome plant; its large leaves frequently serve the artist as an embellishment to his picture; and it would, when luxuriant, attract the notice even of the least observant, the leaves being often more than a foot long. The plant is very common on river banks and in ditches, and has several stems which, in July and August, bear numerous almost leafless whorls of green flowers, the enlarged sepals having prominent veins and large tubercles. Its root is large and very astringent, and a decoction is made from it, and used for washing the mouth.

2. **Curled Dock** (*R. crispus*).—Enlarged sepals broadly heart-shaped, entire, or having small round notches, one only with a perfect, large, coloured tubercle; leaves lanceolate, waved, acute; upper whorls leafless; perennial. This is one of the several species of Dock which grow in waste places, in fields, by roadsides, and especially near dwellings. The stem is two or three feet high, and the wavy leaves are narrowed at the lower part, and crisped at the edges. Its whorls are very numerous and crowded, and the tubercle is orange-coloured. Mr. Babington observes, that in some cases all the sepals are tubercled. Of the root, which is spindle-shaped and yellow, a decoction is sometimes made; or its juice, made into an ointment, is applied by country people in the cure of cutaneous affections.

3. **Meadow Dock** (*R. pratensis*).—Enlarged sepals, unequal, heart-shaped, dilated and toothed at the base; leaves oblong, lanceolate, waved; clusters nearly leafless, whorls distinct; perennial. Many botanists describe this species as having one of the enlarged sepals principally tuberculated; but Mr. Babington observes that sometimes all three are equally tubercled. This plant grows in marshy places, and by roadsides. It bears, in June and July, numerous leafless whorls near to each other, but not crowded. It is the *R. acutus* of Linnæus; some botanists regard it as a hybrid between *R. crispus* and *R. obtusifolius*.

4. **Grainless Water Dock** (*R. aquáticus*).—Enlarged sepals broadly heart-shaped, membranaceous, entire, or wavy, without tubercles; leaves lanceolate, lower ones somewhat heart-shaped, crisped and waved; leafstalks flat and margined above; whorls crowded, mostly leafless; perennial. This species, which is the *R. domesticus* of some writers, is a tall Dock, having its stems three or four feet high. It flowers in July and August, its crowded whorls forming a dense panicle of reddish flowers. It is not uncommon in the north of England and Scotland on moist lands, especially such as are occasionally inundated.

5. **Alpine or Monk's Rhubarb** (*R. alpinus*).—Enlarged sepals broadly heart-shaped, entire, or waved, membranaceous, without tubercles; leaves roundish, heart-shaped, blunt, with channelled footstalks; upper leaves egg-shaped; whorls leafless, crowded; perennial. This is not a common, nor is

it an indigenous plant. As its familiar name would indicate, it was cultivated in the physic-garden of the monastery, and it is near the remains of those old buildings that it is now chiefly to be found naturalized. Its root was formerly employed medicinally instead of the true rhubarb, and its properties are similar to those of that root, but are less powerful. It has large leaves, sometimes half a foot broad, very blunt, wrinkled, and netted with veins; and its crowded leafless whorls of reddish flowers appear in July.

Other species of dock share in the medicinal qualities of the Monk's Rhubarb, but none of the species seems to possess very active properties. The celebrated Patience Dock of the monastery garden was a native of Italy, and it has been remarked that it apparently received its name from some witty person who had observed how long a time it was ere it cured the malady for which it was prescribed. And, indeed, patience seems to have been a virtue particularly necessary, both to the sufferer and the physician, in the days when vegetable decoctions and compounds were the only medicines employed.

6. **Bloody-veined** and **Green-veined Dock** (*R. sanguíneus*).—Enlarged sepals narrowly oblong, blunt, entire, one at least bearing a tubercle; leaves egg-shaped and lanceolate, lower ones somewhat heart-shaped; whorls distant, on long leafless branches; perennial. In one variety of this plant the leaves are veined with bright red, but this is rare; in the more common form the leaves have green veins. The latter plant is not unfrequent in woods or beneath the shadow of trees, in the meadow, or on the hedge-bank, and by the road-side. This and some other species were formerly cultivated in this country for food. In France they are still dressed as spinach, and when mixed with sorrel the leaves form a very pleasant dish. One of our old writers remarks, "All Docks being boiled with meat make it boil the sooner;" and he adds of this species, which he calls Blood-wort, that it is "exceeding strengthening to the liver, and procures good blood, being as wholesome a pot-herb as any grows in a garden; yet such is the nicety of our times (forsooth) that women will not put it into a pot, because it makes the pottage black: pride and ignorance (a couple of monsters in the creation) preferring nicety before health!"

7. **Sharp Dock** (*R. conglomerátus*).—Enlarged sepals linear-oblong, blunt, entire, or obscurely toothed at the base, each having a large tubercle; leaves oblong, pointed, lower ones heart-shaped or rounded at the base; whorls distant, leafy; perennial. This plant is very similar to the green-leaved variety of the last species, differing chiefly in its leafy whorls, and in having a longer tubercle on each of its enlarged sepals. It has spreading branches, and bears its reddish-green flowers from June to August, growing commonly in wet marshy lands. The root is used by dyers, and gives a great variety of tints, from a delicate straw-colour to a fine olive; while to cloth previously dipped in blue dye, it imparts a rich green.

8. **Fiddle Dock** (*R. púlcher*).—Enlarged sepals oval-wedge-shaped, netted with raised veins, deeply toothed at the base, one principally tubercled; branches spreading; whorls mostly leafy; lower leaves fiddle-shaped or oblong, and heart-shaped, blunt; upper ones lanceolate, acute; stem spreading; perennial. This is a species with straggling prostrate stems,

1 ALPINE DOCK
Rumex alpinus
2 RED VEINED D.
R. sanguineus
3 SHARP D.
R. conglomeratus

Pl. 189.

bearing distant whorls of greenish flowers from June to September. It is readily distinguished by the fiddle-shaped leaves.

9. **Broad-leaved Dock** (*R. obtusifólius*).—Enlarged sepals egg-shaped or oblong-triangular, blunt, toothed at the base, one principally tubercled; lower leaves egg-shaped, and heart-shaped, blunt; upper ones oblong or lanceolate; stem roughish; perennial. This, which is one of our most common Docks, is one of the most troublesome weeds with which the farmer has to contend. It grows in pastures, by way-sides, in yards and neglected gardens, mostly preferring cultivated soils. It may be known by its broad, blunt root-leaves, which are generally curled at the margin, and from July to September it bears rather distant whorls of reddish flowers, of which the lower ones are somewhat leafy. The stem is somewhat rough, and two or three feet in height. It is refused by cattle, but Dr. Withering remarks that it is eaten by fallow-deer with such avidity that it is rare to see a Dock growing in a deer-park. The leaves are often used for wrapping round butter and cream-cheese, hence in some country places the plant has the name of Butter Dock. Most of us have applied it, when pained by the sting of a nettle. Mr. Couch, while remarking on the superstitions of Cornwall, says, "Boys when stung by the nettle have great faith in the antidotal properties of the Dock, and when rubbing it into the part in pain, repeat the words, 'Out nettle, in Dock; nettle, nettle stung me.'" Nor is the superstition confined to Cornwall, for the author, during childhood, when stung by the nettle in the fields of Kent, was wont to exorcise it in the words, "Out nettle, in Dock." The expressed juice of the honeysuckle leaf is, however, a far more efficacious remedy against the sting either of plant or insect than the Dock-leaf, the sole virtue of which seems to consist in its coolness. It was this latter quality which induced our forefathers to use it to allay the irritation of a wound. Thus in Browne's Pastorals we find—

> "And softly 'gan it bind
> With Dock-leaves and a slip of willow-rind."

The root of this Dock is very astringent. It was formerly used by dyers, and when powdered it forms one of the very best of dentifrices. The species sheds a profusion of seeds, and as these ripen rapidly and perfectly, the earth would soon be overrun by the Dock were it not that they are too heavy to be wafted to a distance by the wind. When the plant has established itself, however, it is most difficult of eradication, for almost every seed springs up near the parent plant; and if but a small portion of the root-stock is left by the weeder in the soil, it will generate buds and send them to the surface. Even if the root be cut to pieces by the plough or spade, each little piece pushes up its green leaf in the next spring. The seeds, too, often become mingled with those of the grasses, and when sown on good land an abundant crop of Docks comes up in the meadow. It is remarkable, however, of the Dock, that it never flourishes in poor soils; and Dr. Keith gives, in his "General View of the Agriculture of Aberdeenshire," an anecdote relating to this peculiarity:—A person who took a small farm in that county, and entered upon it at the usual time of Whitsunday,

observed that there was not a single Dock on his land. Anyone knowing the troublesome nature of this weed might have supposed that this was a source of congratulation. The farmer, however, better knew the nature of land and its weeds, and nine months after he had entered on his farm, he called on the proprietor to inform him of his intention of quitting it. The landlord inquired the reason of this decision, as the tenant had as yet had no opportunity of seeing what crop he could raise in his fields. "Sir," observed the farmer, "there was not a Dockan on it on Whitsunday; I brought Dockans from different places and have planted them, but they have not answered at all, and I know that what will not grow Dockans cannot grow corn." Dr. Keith adds that this self-taught botanist was perfectly right in his conclusion that the farm was a bad one.

10. **Golden Dock** (*R. maritimus*).—Enlarged sepals wedge-shaped, acute, each with a lanceolate entire point, a prominent narrow oblong tubercle, and upon each side two bristly teeth; whorls much crowded, leafy; leaves all linear-lanceolate; perennial. This rare Dock is, during July and August, a very conspicuous plant in some salt marshes, and it sometimes grows also in moist inland soils. Its narrow leaves distinguish it at all times, and when the bright orange-coloured flowers appear on the tall stem, it is seen well to deserve its name of Golden Dock. The blossoms are very numerous, and grow in leafy crowded whorls.

11. **Yellow Marsh Dock** (*R. palustris*).—Enlarged sepals lanceolate, rather acute, each with two or three bristly teeth, and a narrow oblong tubercle; flowers in distant whorls; leaves linear-lanceolate; perennial. This is a rare species, inhabiting inland, marshy soils. It is very similar to the last, of which it is probably a sub-species, but differs in the form and number of its enlarged sepals, and the teeth which border them, as well as in having a much larger nut. The root-leaves are rounded or slightly winged below.

* * *Plants acid; stamens and pistils on different plants.*

12. **Common Sorrel** (*R. acetosa*).—Outer sepals turning backwards; enlarged ones roundish, heart-shaped, entire, membranous, with a very minute tubercle at the base; leaves oblong, arrow-shaped; perennial. Every child knows the Common Sorrel, which from May to August reddens many a meadow, its tint harmonizing well with the bright verdure of the grass. The stem, which is one or two feet high, is of a reddish tinge, and the large petals or sepals are at first bright red, and afterwards of a purplish colour. The rich green, smooth leaves have a pleasant acid flavour, which is much more powerful at the flowering season of the plant, and is due to the presence of binoxalate of potash in some quantity. Many of the leaves remain on the sunny slopes of meadows, sea-cliffs, and other places, even during winter, but they have at that time little or no acidity. In autumn the foliage has much redness. This plant and an allied species, *R. scutatus*, the French Garden Sorrel, have long been cultivated as salad herbs; and fish-sauce, and various dishes, as sorrel soup, are very commonly made in Continental countries from these plants. In former times, both this and the sharper acid Wood Sorrel, as well as vine-leaves, unripe grapes, and crab-

1 FIDDLE DOCK
Rumex pulcher

2 BROAD LEAVED D.
R. obtusifolius

3 GOLDEN D.
R. maritimus.

4 YELLOW MARSH D.
R. palustris.

apples, were much used in making verjuice; for the cook in the olden times used verjuice in the preparation of numerous dishes. The milkmaid in Isaac Walton's "Angler" tells her guests, "If you come this way a-fishing two months hence, a grace of God, I'll give you a syllabub of new verjuice in a new made haycock; and my Maudlin shall sing you one of her best ballads." Then, too, the juice of the Sorrel was often expressed and used medicinally, and doubtless would prove a good fever drink. It is recommended by all the old herbalists in "hot diseases," and deemed efficacious also in agues, jaundice, and pestilential maladies, as well as to quench thirst and renew appetite in weak digestions. It is decidedly antiscorbutic in its properties. It grows in the Arctic regions; and Dr. Sutherland, in his Journal of a Voyage to Baffin's Bay in the years 1850 and 1851, mentions the growth of this Sorrel on the cold shores which they had to reach by walking over the ice. As the voyagers approached the beach, they delighted in the beautiful yellow poppies which grew among its stones, throwing a charm over the spot. "If the traveller," says Dr. Sutherland, "wished to amuse his palate, he might feed *ad libitum* upon the leaves of cruciferous plants in full bloom, on Sorrel and scurvy-grass. Of these plants, especially the former, I believe persons labouring under scorbutus ought to obtain a sufficient quantity to effect a beneficial change in the disease. It often occurred to me that the resources of the climate, in the way of plants, might be made available to prevent scurvy. Although a basketful could not be obtained in one or even two hours by one person, handfuls could; and this operation extended over several hours, by an increased number of men, might go far to appease the insatiable craving for vegetable food." In some parts of Sweden, where barley and rye can scarcely be raised, the poor are often kept from starvation by eating bark-bread, and a bread which they described to Dr. E. D. Clarke as made of grass. This traveller found on examination that this grass was our Common Sorrel, and adds, that the bread made from it was far more salutary than that made from the fir-bark. The root of this Sorrel yields a good red dye.

The French Garden Sorrel (*R. scutatus*) has been found in waste places near Edinburgh, and elsewhere, but is merely an escape from gardens, and cannot be considered as naturalized in this kingdom.

13. **Sheep's Sorrel** (*R. acetosélla*).—Sepals ascending, inner ones scarcely enlarged, egg-shaped, without tubercles; lower leaves lanceolate and halberd-shaped, with entire lobes; perennial. This little Sorrel grows commonly on dry heaths and downs. It is always a smaller and more slender plant than the last species, and is rarely a foot high. It is, however, very variable both in size and in the form of its leaves. On some plants, the root-leaves alone are halberd-shaped, on others the stem-leaves also are of this form; the other leaves are stalked and lanceolate. It bears its small red flowers from May to August, and in autumn its foliage is much tinged with red. Wherever this Sorrel is abundant, it indicates a dry, barren soil.

3. Mountain Sorrel (*Oxýria*).

Kidney-shaped Mountain Sorrel (*O. renifórmis*).—Stems naked, or with one leaf; root-leaves kidney-shaped; perennial. This is truly a

mountain plant, growing at great elevations near waterfalls and rivulets; and it is very common on the wet mossy rocks in such places from North Wales northwards. It is in appearance somewhat like our Common Sorrel, and possesses a similar acidity, but is a much shorter and stouter plant, and its root-leaves, which are kidney-shaped and fleshy, are on long stalks. The flowers grow, from June to August, in clustered spikes, and are of a greenish colour. The stems are from eight to ten inches high, and are usually leafless. It is also known as *O. digyna.*

Order LXXII. THYMELEÆ—DAPHNE TRIBE.

Perianth tubular, often coloured, 4 rarely 5 cleft, occasionally having scales in its mouth; stamens 8, 4, or 2, inserted in the tube of the perianth; ovary 1-celled, style 1; stigma undivided; fruit a 1-seeded nut or drupe. The order consists of shrubs with undivided leaves, and remarkably tough and caustic bark. In some cases the berries are poisonous.

MEZEREON AND SPURGE LAUREL (*Dáphne*).—Perianth single, often coloured, 4-cleft; stamens 8; fruit a berry. Named from the Nymph Daphne, who was changed into a Laurel, many of the species having laurel-like leaves.

MEZEREON AND SPURGE LAUREL (*Dáphne*).

1. **Common Mezereon** (*D. mezéreum*).—Flowers lateral and sessile, mostly in threes; tube hairy; segments egg-shaped and acute; leaves lanceolate, shed in autumn; perennial. The Mezereon is a small shrub, found, though rarely, in English woods, as in some of Sussex, Suffolk, and Hampshire. In some places, doubtless, it is either the outcast of the neighbouring garden, or was borne thence into the woods by birds; but it is thought by the authors of the "British Flora" to be probably wild in Hampshire. We are all familiar with it, however, as a garden shrub, for its bright purplish or occasionally white fragrant flowers are welcome there in February and March, when the crocuses and snowdrops are almost its sole companions. The leaves begin to appear about the time at which the flowers are fully expanded, and they are of a most delicate green tint, while in autumn the bright red berries cluster in numbers among the foliage, the hue of which has gradually deepened to a full green. It is a bushy shrub, about two or three feet high, and it grows well beneath the shade of trees. It is found in all European countries, and is a very common plant in the woods of Germany, where it overshadows the bright blue hepaticas, which in spring gleam from among the fallen leaves of winter. It does not seem to have been known to our earliest writers as a British plant, for Turner does not mention it; but Gerarde says of it, "This plant groweth naturally in the moyst and shadowie woods of most of the East countries, especially about Elbing, which we call Meluin in Polande, from whence I have had great plentie thereof for my

1. COMMON SORREL.
Rumex acetosa.

2. SHEEP'S S.
R. acetosella.

3. KIDNEY-SHAPED MOUNTAIN S.
Oxyria reniformis.

4. SPURGE LAUREL.
Daphne laureola.

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garden, where they flower, flourish, and bring forth fruit to maturitie." He says of it that it is called Dutch Mezereon, but that he would rather call it *Chamelæa Germanica*. He also gives it the name of Spurge Flaxe or Dwarffe Bay. Parkinson, who calls it Flowering Spurge, says that this species grows wild in Germany, but that the Spurge Laurel grows wild in England; and the best botanist of early days, John Ray, never discovered it among our wild plants. The Germans call the plant *Gemeiner Seidelbast*, or *Kellerbalz*; the Italians term it *Laureola femina*, *Biondella*, or *Camelia*; and the French, besides its common name of *Laureole femelle*, give it that also of *Bois gentil*, *Mézéreon*, and *Bois joli*. The name of Mezereon seems to be from its Persian name of *Madzaryoun*.

The roots of the plant are large and very acrid, and have long been a popular remedy for toothache; but they should never be used in a fresh state, as they are likely to produce considerable inflammation in the mouth. The bark, which is also powerfully acrid, is frequently applied in France to raise a blister on the skin, and the plant is extensively used in medicine on the Continent. In Germany large quantities of this bark are in spring stripped from the branches, and being folded in small bundles, are dried for use; its taste is at first sweet, but its acrimony is soon perceptible. The berries are highly poisonous, and are employed in Sweden to destroy wolves and foxes. Linnæus records a case in which a dose of these berries proved fatal to a man; and Dr. Thornton mentions that his sister died in childhood from having swallowed a small number of them. Gerarde says, "If a drunkard doe eat one graine or berrie of it he cannot be allowed to drinke at that time, such will be the heate of his mouth and choking in the throte." If children taste these berries accidentally, oil, fresh butter, or milk should immediately be given. In Dauphiny, as well as in Siberia, these fruits are, however, of a less noxious character than in our climate; and they are commonly used medicinally, thirty berries forming a dose. In Siberia, where they are called Wild Pepper, they are given to children in whooping-cough. The Russian ladies are said to rub their cheeks with the fruits of the Mezereon, to heighten their colour by a slight irritation. A decoction of the plant is mingled with other ingredients in the Lisbon diet drink, and this decoction is considered alterative and similar to sarsaparilla. The robin feeds eagerly on Mezereon berries, and they are also much relished by other birds. Several foreign species of Daphne have a most tenacious bark, and from the bark of one of them, *D. bholua*, a fine soft paper is manufactured. Sir Joseph Hooker says that the books in the convent of Yangma, in Nepal, were of the usual Tibetan form, an oblong square, and that they consisted of several leaves of paper made of the bark of a Daphne, bound together by silk cords, and placed between ornamental wooden boards. The vegetable lace of Jamaica is the inner bark of *Lagetta lintearia*, a plant very nearly allied to the Daphne; the lace looks like the product of art, forming a silky web. A frill, cravat, and ruffles were made of this material for Charles II. Several species of Daphne are found in our gardens, and one which is not unfrequent there, the Neapolitan Mezereon, is an evergreen, and grows on the hills and open places of some parts of Italy as freely as the furze grows on our moorlands.

2. **Common Spurge Laurel** (*D. laureola*).—Leaves lanceolate, narrowing at the base, evergreen, thick, and glossy; flowers each with a short bract, in axillary drooping clusters, which are shorter than the leaves; perennial. This evergreen plant is very common in the woods of England, but is rare, and, perhaps, not truly wild in Scotland. It has a stout stem, from one to three feet high, with scarcely any leaves at the lower part, but bearing at the summit of its stem and branches tufts of bright glossy laurel-like leaves, which, however, soon twist and turn brown if too much exposed to the sun. The flowers hang from January to May among the leaves, looking as if cut out of pale green wax, and being about five in a cluster. The berries are oval, at first green, but becoming black when ripe; and they are believed to be poisonous to all animals except birds. The plant thrives best among trees, and is often grown in shrubberies. Its properties are similar to those of the Mezereon, and it is used for similar purposes, but both plants are so acrid that persons employed in pounding them often suffer considerable inconvenience from the irritation caused by the particles rising from them. A stimulating ointment made of this species is commonly used in villages in this and other countries. The name of Spurge Laurel is not inappropriate to this Daphne, as it somewhat resembles our wood Spurge. The French call it *Lauréole male*, or *Laureole des Anglais*; the Germans term it *Immergrüner Seidelbast*; and the Italians, *Laureola maschio*.

Order LXXIII. SANTALACEÆ—SANDAL-WOOD TRIBE.

Perianth attached to the ovary, 4- or 5-cleft, valvate when in bud; stamens 3—5, opposite the lobes of the perianth; ovary 1-celled; style 1; stigma often lobed; fruit a hard dry drupe. This order receives its name from the Sandal-wood of the East (*Santalum album*), and consists of trees, shrubs, and herbaceous plants, which are usually root-parasites. The only British genus contained in it is the small Bastard Toad-flax.

BASTARD TOAD-FLAX (*Thésium*).—Perianth 4—5 cleft, not falling off; stamens with a small bundle of hairs at their base; drupe crowned with the perianth. Name of doubtful origin.

BASTARD TOAD-FLAX (*Thésium*).

1. **Lint-leaved Bastard Toad-flax** (*T. linophyllum*).—Stems prostrate or ascending; leaves linear-lanceolate, 1-nerved; clusters leafy; flower-stalks with three bracts; perennial, with a woody rootstock. This is a rare plant, inhabiting chalky and limestone hills, but not extending north of Gloucestershire and Norfolk. It has many herbaceous, spreading, leafy stems, terminated in July by clusters of whitish-green flowers, and its leaves are very narrow and pointed. It is parasitic upon the roots of various pasture plants. The Thesium was said by Athenæus to be so called because it formed part of the garland presented by Theseus to Ariadne; but the Theseion of the ancients was undoubtedly a different genus from ours, which comprises only obscure and unattractive little plants. The French call the Bastard Toad-

1 COMMON MEZEREON.
Daphne mezereum.

2 LINT-LEAVED BASTARD TOADFLAX.
Thesium linophyllum.

3 COMMON BIRTHWORT.
Aristolochia clematitis.

flax *Thésium;* the Germans, *Leinblatt;* the Dutch, *Vlaschblad;* the Russians, *Linossisty tési.* M. de Candolle terms this species *T. humifúsum.*

2. **Erect Bastard Toad-flax** (*T. húmile*).—Stems erect, branched from the base; leaves linear, 1-nerved, fleshy; flowers in spiked racemes, sessile, with three bracts; fruit four or five times as long as the perianth; perennial. Specimens of this plant have been gathered in Devonshire, but it is not an indigenous plant.

Order LXXIV. ARISTOLOCHIEÆ—BIRTHWORT TRIBE.

Perianth attached to the ovary below, tubular above, with a wide mouth; stamens 6—10 or 12, inserted on the ovary; ovary 4—6-celled; styles 6, their inner surface stigmatic; fruit 4—6-celled, many-seeded. The order consists of shrubs or herbaceous, often climbing plants, very abundant in the warmer parts of South America, but rare in other countries: they contain bitter, tonic, and stimulant properties.

1. BIRTHWORT (*Aristolóchia*).—Perianth tubular, curved, swollen at the base, the mouth dilated on one side; anthers 6, inserted on the style; stigma 6-lobed; capsule 6-celled. Name, the old Greek, having reference to its former use as an aid in parturition.

2. ASARABACCA (*Asárum*).—Perianth bell-shaped, 3-cleft; stamens 12, inserted at the base of the style; style 6-lobed; capsule 6-celled. Name from the Greek *a*, not, and *seira*, a wreath, because it was excluded by the ancients from their garlands.

1. BIRTHWORT (*Aristolóchia*).

Common Birthwort (*A. clematítis*).—Stems erect, without branches; leaves heart-shaped, stalked, smooth; flowers upright; lip oblong, tapering; root creeping, and perennial. This plant, though not truly wild, seems so long since to have been established in some parts of the east and south of England, that it may be regarded as naturalized. It grows among ruins, and bears in May dull yellow flowers, growing several together. The corolla is swollen at the base, but contracted above, and expanding with an oblong lip with a short point. The swollen part of the flower is clothed, inside, with stiff hairs, pointing downwards, and the authors of the "British Flora" remark, "When the flower is expanded it is not uncommon for a little insect (*Tipula pennicornis*) to enter it, the stiff hairs preventing its egress until it has brushed off the pollen from the anthers upon the stigma; the perianth then becomes withered, the hairs become flaccid, and the insect makes its escape." This statement needs some qualification. It is now known that the stigmas are mature before the anthers shed their pollen, and should the flies have previously visited a Birthwort flower, they will bring pollen on their bodies and convey it to the stigmas of the flower they are now in. When the stigmas have become no longer susceptible and have begun to wither, the anthers shed their pollen and dust the flies with it. Then, and not till then, do the hairs in the flower-tube shrivel and set the prisoners free, who

are now primed to go through the process with another Birthwort flower. The young shoots of the plant are somewhat like a vine, whence the name of *Clematitis*, and the leaves are large and heart-shaped.

This Birthwort grows wild on the stony places of Languedoc and Provence, and its roots are used as a stomachic in many parts of Europe. They have a disagreeable odour, and would probably prove deleterious to animals, as some other kinds are said to do, the roots of *A. grandiflora* proving fatal to swine, which sometimes tear them up and eat them. Several of the species are renowned in some countries of Europe for having an extraordinary influence over the serpent race; and the Serpentary (*A. serpentaria*) is stated to be so offensive to those reptiles that they not only avoid the places where it grows, but even flee from the traveller who carries a piece of the plant in his hand. It is also very generally believed that the Egyptian snake-jugglers stupefy these animals by its means; and Jacquin asserts that a few drops of the juice of one species introduced into the mouth of a serpent so intoxicate it that it becomes insensible, and suffers itself to be handled with impunity.

2. Asarabacca (*Asarum*).

Asarabacca (*A. europæum*).—Leaves kidney-shaped, blunt, stalked, evergreen; stem very short; segments of the perianth short, and curving inwards; rootstock creeping, perennial. This plant occurs in woods in the north of this kingdom, as in Lancashire, Wilts, Bucks, Herefordshire, Yorkshire and Denbigh; but it is in all probability an introduced, and not a native species. It is a singular herb, bearing in May a solitary, rather large, drooping flower of a dull purple-green hue, which is placed on a short tough stalk between two shining bright green scales. The roots, which are aromatic, have been much used medicinally, and from its frequent use as a remedy for the effects of excessive drinking, the plant has acquired in France the name of *Cabaret*. The French call it also *L'Asuret;* the Germans, *Haselwurz;* the Dutch, *Mans-oor;* the Italians, *Asaro*. The leaves, when powdered, are used as snuff, and considered beneficial in headache. The acrid principle of the plant is regarded as similar to that of the *Arum*, and the roots have very powerful medicinal properties.

Order LXXV. EMPETREÆ—CROWBERRY TRIBE.

Stamens and pistils on separate plants; perianth of several scales, arranged in 2 rows, the inner resembling petals; stamens 2—3, opposite to the scales of the outer row; ovary of 3, 6, or 9 cells, on a fleshy disk; style 1; stigma rayed; fruit fleshy, with bony cells; seeds 1 in each cell. The order consists of low shrubs with heath-like leaves, without stipules, and with small flowers, chiefly inhabiting Europe and North America.

Crowberry (*Empetrum*).—Perianth of 3 outer and 3 inner scales; stamens 3; fruit globose, with 6—9 seeds. Name from the Greek *en*, in, and *petron*, a stone, because it grows in stony places.

1. ASARABACCA
Asarum europæum.
2. BLACK CROWBERRY
Empetrum nigrum.
3. PERENNIAL MERCURY
Mercurialis perennis.
4. ANNUAL M.
M. annua.

CROWBERRY (*Empetrum*).

Black Crowberry, or **Crakeberry** (*E. nigrum*).—Stems branched, and prostrate; leaves linear-oblong; flowers axillary towards the summit of the branches; stigma with 9 rays; perennial. This is a small shrubby prostrate plant, very similar to a heath, with narrow oblong leaves, the margins of which are so rolled under that they almost meet beneath. The flowers expand from April to July, and grow in the axils of the upper leaves. They are small and of purplish colour, and are succeeded by the autumnal clusters of black berries. The Crowberry extends as far south as Devonshire, Somerset and Dorset, but is most abundant in our northern mountainous districts, as well as in the more northern countries of Europe. Its berries furnish a large store of food for the moor-fowl, and though they are acid, and to most people unpleasant in flavour, yet they are eaten in the Arctic regions, and considered a preventive to scurvy. The people of Siberia make an acid drink from these fruits, and, as well as the Kamtschatdales, use them in puddings. They are, besides, in the north of Europe generally used to dye cloth of a black colour, and to darken the tint of various kinds of furs. In our country, Crowberries are eaten chiefly by children, but they should not be taken in large numbers. In the Orkneys very good ropes are made from the shoots of the plant. The shrub is sometimes called Black-berried Heath. The French call it *Camarine;* the Germans, *Rauchbeere;* and the Dutch, *Besheide.* Cattle appear to have no relish for the plant.

Order LXXVI. EUPHORBIACEÆ—SPURGE TRIBE.

Stamens and pistils in separate flowers; perianth of 3, 4, or more lobes, sometimes wanting; stamens varying in number and arrangement; ovary mostly 3-celled, with as many styles and stigmas; fruit usually 3-celled and 3-seeded. The description here given of the order includes only the British genera; but many of the tropical genera are furnished with both sepals and petals. Our native species have herbaceous or woody stems, sometimes leafless, but usually with opposite, alternate, or whorled leaves. They are mostly milky herbs, and of a highly corrosive, acrid, or narcotic character. Some of the exotic plants of the family yield the most deadly poisons. The Manchineel (*Hippomane mancinella*), whose shadow was once thought fatal to the sleeper; and the Mandioc of the West Indies (*Jatropha manihot*), the juice of which will in a few minutes cause death, are among the dangerous species; but on the other hand we owe to this order the castor oil, which is extracted from the seed of *Ricinus communis*, and the caoutchouc of Guiana, which is the thickened juice of *Siphonia elastica;* while even the poisonous Mandioc affords in its root the nutritious cassava, the bread made of which is by the Creoles preferred to that made of wheaten flour; and from the same root we derive the useful tapioca. The gum resin, or Euphorbium of the chemist, is procured from three species of Spurge growing in Africa and the Canary Islands.

1. MERCURY (*Mercuriális*).—Stamens and pistils in separate flowers, often

on different plants; perianth small, 3-cleft to the base; barren flower with 8 or more stamens; fertile flower with 2 styles; ovary 2-lobed; capsule 2-celled, 2-seeded. Name in honour of the god Mercury, who is said to have discovered the virtues which were attributed to the plant.

2. SPURGE (*Euphórbia*).—Involucre bell-shaped, containing many barren flowers or stamens, and 1 fertile flower or pistil; ovary 3-lobed; styles 3; stigmas 2-cleft; capsule 3-celled, 3-seeded. Name from Euphorbus, physician to Juba, King of Mauritania, he having first used the plant medicinally.

3. BOX (*Búxus*).—Stamens and pistils in separate flowers on the same plant; perianth 4-cleft to the base; barren flower with 1 bract; stamens 4; fertile flower with 3 bracts; styles 3; capsules with 3 horns, 3-celled; cells 2-seeded. Name changed from *pyxos*, the Greek name for this tree.

1. MERCURY (*Mercuriális*).

1. **Perennial or Dog's Mercury** (*M. perénnis*).—Stem unbranched; flowers in lax axillary spikes; barren flowers on long stalks; leaves egg-shaped, serrated, stalked, somewhat rough; rootstock creeping, perennial. This plant is well known to all who observe the common things around them. Sometimes it is to be seen growing in great abundance on the hedge-row or in the wood; and those who have gardens see, in early spring, numbers of its light green leaves, with almost whitish veins, developing themselves upon the flower-bed; and the foliage, as it grows older, becomes of a much deeper bluish-green. The plant is about a foot high, bearing its leaves chiefly on the upper part of the stems, several of which arise from its creeping rootstock. During April, May, and June, the green flowers grow in loose spikes from among the leaves, and the long-stalked barren ones are conspicuous by their numerous stamens. From the growth of the plant in towns and town gardens, it is sometimes called Town-weed; and in Kent it is known as Kentish Balsam, from the similarity of the leaf to that of the garden Balsam. The old herbalists called it Dog's Cole and Cynocrambe. The French term it *Mercuriale;* the Germans, *Bingelkraut;* the Italians, *Mercorello;* and the Russians, *Proleska.* It is very poisonous both to man and the inferior animals, and many cases are recorded of serious illness having resulted from eating this plant in mistake for one of the goosefoots. Sheep sometimes suffer from eating this plant. It is observed that the stamen-bearing and pistil-bearing plants generally grow each in separate patches, so that the Mercury produces comparatively few seeds, and is chiefly propagated by the roots. The leaves on drying become of a blue colour. It affords a fine deep blue tint, which is, however, destroyed by acids or alkalies.

2. **Annual Mercury** (*M. ánnua*).—Fertile flowers whorled, nearly sessile; stem with opposite branches; leaves smooth; annual. In one form of this species the fertile and barren flowers are on distinct plants, the leaves egg-shaped or oblong, and the flowers in lax spikes: in another form, the barren and fertile flowers are intermixed, and grow in whorls, while the leaves are lanceolate. This species is not frequent, though often growing in the neighbourhood of English towns and villages in abundance; it is rare in Ireland, and is found only casually in Scotland. It is taller than the pre-

1. PURPLE SPURGE
Euphorbia pephis

2. SUN S
E. helioscopia

3. BROAD LEAVED WARTED S
E. platyphylla

4. IRISH S
E. hiberna

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ceding, is branched, and has smaller leaves of a light green colour; it also flowers later in the year, and its little green blossoms do not appear before August. The leaves abound in a mucilaginous substance, and do not partake of the poisonous properties of the other species. They are, indeed, in Germany frequently used as spinach, though their wholesomeness, if used without boiling, would seem somewhat doubtful, for the water in which they are cooked possesses powerful medicinal properties. The plant was formerly prescribed by medical practitioners, and Linnæus mentions it as an anodyne. George Herbert, in his "Priest to the Temple," while enumerating the duties of the "Parson" and his family, says: "For salves his wife seeks not the city, but prefers her gardens and fields before all outlandish gums; and surely hyssop, valerian, Mercury, adder's tongue, meliot, and St. John's wort, made into a salve, and elder, comphrey, and smallage, made into a poultice, have done great and rare cures." The pious author adds, "In curing of any, the Parson and his family use to premise prayers; for this is to cure like a parson, and this raiseth the action from the shop to the Church."

2. Spurge (*Euphórbia*).

** Leaves with stipules.*

1. **Purple Spurge** (*E. péplis*).—Stems prostrate, forked; leaves leathery, oblong, heart-shaped, nearly entire; flowers axillary, solitary; glands of the involucre rounded on the outside; capsule smooth, keeled; seeds white and smooth; annual. This plant is peculiar to the sands of the sea-shore, and is found on the coast from South Wales to Hampshire, but it is very rare. It lies quite flat upon the sand, sending out its numerous branches in a circular direction. Its stems are of a glaucous green, much tinged with purple, and its green blossoms expand from July to September.

** * Leaves without stipules.*

2. **Sun Spurge** (*E. helioscópia*).—Umbel of five rays, which are often repeatedly forked; bracts and leaves membranous, inversely egg-shaped and wedge-shaped, serrated upwards; capsule smooth; seeds brown, rough and reticulated; annual. This is a common plant on waste and cultivated grounds, and every child knows it by one or another of its familiar names. Country people call it Churn-staff, Wart-weed, Cat's-milk, Wolf's-milk, and Little-good. The old herbalists termed it Sun Tithymale, and in Holland it is commonly called *Wolfen-milch*. It is a troublesome weed in corn-fields and gardens, varying in height from a few inches to two feet, and having, in July and August, a spreading umbel of bright greenish-yellow flowers, which is large in proportion to the plant, and has several serrated leaves close beneath it. The milky juice is an old remedy for the cure of warts and other excrescences of the skin, and is of a very caustic nature. Many a child who has held it near his eyes has felt them pained by its irritating influence; and children who bite its leaves are often alarmed by the burning sensation which it leaves on the tongue, till this is allayed by a draught of milk. Dr. Johnston remarks that a case is on record in which a boy was killed by swallowing a piece of this Sun Spurge. If we break a leaf of the plant in

two, we see minute white drops oozing from each part; though it is remarkable that if the leaf be altogether severed from the stalk, and then broken this milk is not perceptible. The species all possess more or less of the milky juice, which contains caoutchouc, and which will redden the skin, or even blister it if delicate. The old Greeks tell how this acrid sap was dropped into the eye to remove spots on the cornea. It has powerful medicinal properties, and is used by country people as a caustic for the bite of a viper, and sometimes rubbed on the skin behind the ear as a cure for toothache. Sheep are said by Linnæus to eat the plant, and to be injured by it, while it also imparts an unpleasant flavour to their flesh. The ancients commonly used the thick milky juices of plants for making sympathetic inks, and letters were written with milk of this kind, and strewed over with black powder; but any other glutinous substance would have served the purpose as well. The French term the plant *L'Euphorbe;* and it is called by a synonymous word in all the Continental countries.

3. **Broad-leaved Warted Spurge** (*E. platyphýlla*).—Umbel of about five principal 3-cleft and 2-cleft branches; bracts heart-shaped; leaves membranaceous, broadly inversely egg-shaped, lanceolate, acute, finely serrated; glands of the involucre oval, yellow; capsule warted; seeds olive-brown and smooth; annual. This plant is rare, but may be found in corn-fields and waste places south of Gloucester and Yorks. It might be at first mistaken for a stunted specimen of the Sun Spurge, but it has, in many instances, the leaves slightly hairy beneath, and the capsules are rough, with minute rounded tubercles at the back. Its green flowers appear from June to October. A sub-species of this, agreeing with Reichenbach's figure of *E. stricta*, and differing from the type by the leaves being narrowed above the base, instead of narrowed gradually to the base, occurs between Tintern and the Wynd-cliff. It further differs from the typical form in the smaller size of bracts and fruit, the latter being studded with conical warts.

4. **Irish Spurge** (*E. hibérna*).—Umbel of about five principal branches; bracts and leaves egg-shaped or elliptical, entire; glands of the involucre four in number, kidney-shaped, with intermediate rounded lobes; capsule warted, shining; seeds pale brown, smooth; perennial. This species, which is used by fish-poachers to poison salmon, is found in hedges and thickets in the south and west of Ireland, and on a few spots in England, as about Brendon, in North Devon, and between Faversham and Sittingbourne, in Kent. Its stem is from a foot to a foot and a half high, and the glands of the involucre purple. The leaves are broad and slightly hairy beneath, and it flowers in May and June.

5. **Marsh Sun Spurge** (*E. palústris*).—Umbel about 5-cleft, then 3-cleft and 2-cleft; bracts all elliptical, shining, entire; leaves broadly lanceolate, minutely serrated, slightly hairy; glands of the involucre 4, transversely oval; capsules warted, hairy; seeds inversely egg-shaped, minutely dotted, smooth; perennial. This is Mr. Babington's description of a plant sometimes termed *E. pilósa*. It flowers in May and June, and its stem is from two to four feet high, and leafy throughout. It occurs in shady places near Bath. It is not considered indigenous.

6. **Coral-like Hairy Spurge** (*E. corallóides*).—Umbel 5-cleft, then

1 MARSH SPURGE
Euphorbia palustris

2 CORAL LIKE HAIRY S.
E. coralloides

3 LEAFY BRANCHED S.
E. esula

4 CYPRESS S.
E. cyparissias

Pl. 196.

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3-cleft, and 2-cleft; bracts egg-shaped, oblong, and hairy; leaves lanceolate, minutely serrate, woolly; glands of involucre transversely oval; capsule nearly smooth, woolly; seeds inversely egg-shaped, minutely dotted, and with faint netted bands. This is an introduced plant, found in hedges at Slinfold in Sussex. The height of its stem is from two to three feet, with the leaves nearly all at the upper part, and its greenish flowers appear in May and June.

7. **Leafy-branched Spurge** (*E. ésula*). — Umbel many-cleft, then 2-cleft; partial bracts heart-shaped, blunt, spine-tipped; leaves membranaceous, lanceolate, or linear-lanceolate, narrowed below, shining; glands of the involucre roundish, with 2 horns; seeds inversely egg-shaped, smooth; rootstock creeping and perennial. This Spurge is rare in woods, and probably not truly wild, except in Jersey. Its stem is from twelve to eighteen inches high, leafy, with a few axillary leafy branches. It flowers in July, and is found on the banks of the Tweed, and in woods near Edinburgh.

8. **Cypress Spurge** (*E. cyparíssias*).—Umbel of many principal branches, and several scattered foot-stalks below; bracts heart-shaped; leaves linear, entire, membranaceous, shining; glands of the involucre moon-shaped; capsules nearly smooth; perennial. This Spurge is readily known from all other British species by its slender grass-like leaves. It is not a common, and probably not an indigenous plant, though long since naturalized in the woods of Northumberland and some other counties. It possesses powerful and dangerous properties, but it appears in old times to have been very highly prized as a medicine both in this and other European countries. It was formerly called Welcome-to-our-House and Quacksalver's Spurge, and it is still termed in French villages *Rhubarbe des Pauvres*, though it is to be hoped that it is not in general use among the poor. A French physician records a case in which it proved fatal to a woman who took it medicinally. Sheep and other animals will sometimes eat it, but it is poisonous if taken in great quantity.

9. **Sea Spurge** (*E. parálias*).—Umbel of about 5 principal 2-cleft branches, often with inferior scattered ones; bracts somewhat kidney-shaped; leaves leathery, elliptic-oblong; glands of involucre with 3 or 4 short points; capsule wrinkled; seeds smooth; rootstock woody, tough, and perennial. This, though not a generally distributed plant of our sea-coasts, is abundant on some of the sandy shores of England, and also near Dublin. It is remarkable for the glaucous hue of its leaves, which are very numerous, and so crowded, especially on the young shoots, that they overlap each other. It is a stout, somewhat shrubby plant, several stems arising from one root. These are woody below, and shorter than the flowering one, which is about a foot high. The yellowish-green flowers may be seen from August to November. Gerarde, speaking of the Spurge plant, says, "But the strongest is that which grows near the sea. Some write by respect of others that it enflameth exceedingly, but myselfe speak by experience; for walking along the sea-coast at Lee in Essex, with a gentleman called Mr. Rich, dwelling in the same towne, I tooke one drop of it in my mouth, which neverthelesse did so inflame and swelle in my throte that I hardly escaped with my life. And in like case was the gentleman; which caused us to take our horses and

poste for our lives to the next farm-house to drinke some milke, to quench the extremitie of our heate, which then ceased."

10. **Portland Spurge** (*E. portlándica*).—Umbels 5-cleft, then 2-cleft; bracts triangular, heart-shaped; leaves membranaceous, inversely egg-shaped, or inversely egg-shaped and lanceolate; generally blunt, and somewhat spine-tipped; glands of the involucre 4, crescent-shaped, with two long points; capsule rough at the angles; seeds almost white, and dotted; perennial. This rare species grows on the sandy sea-coasts in the south and west of England, in Wales, the Isle of Man, about Dublin, and in the south of Scotland. It received its name from Portland Island, where it has been long abundant, and where Mr. Gosse found it growing, in such quantity, that he says it is quite a characteristic of the place. The stem is scarcely a foot high, the leaves are numerous, and spread out in dense rosettes on the ground. The plant is smooth and glaucous, and the stems and leaves are often much tinged with red. It is a much less stout and conspicuous species than the last, but is one of the most caustic of the genus. It flowers from May to August.

11. **Petty Spurge** (*E. péplus*).—Umbel 3-cleft, then forked; bracts egg-shaped; leaves membranaceous, broadly egg-shaped, stalked, lower leaves roundish; glands of the involucre crescent-shaped, the horns very long; capsule smooth, with thickened rough keels; seeds oval, dotted; annual. This Spurge is abundant in waste places and cultivated fields, and is, throughout the kingdom, a common garden weed. It is three or four inches high, of a very pale green, its three-rayed and forked umbel bearing numerous pale-green flowers from July to October. It is much less acrid than most of the Spurge family, and might be safely used medicinally. It is often prescribed by physicians on the Continent, its powers existing in the oil of its seeds.

12. **Dwarf Spurge** (*E. exígua*).—Umbel 3-cleft, then forked; bracts lanceolate, acute, unequal below; leaves linear, blunt, or spine-tipped; glands of the involucre roundish, with 2 horns; capsules smooth, with slightly thickened and tubercled angles; seeds small, white, angular, wrinkled; annual. This species is common in corn-fields on a light soil in England; rare in Scotland, and only occurring locally in Ireland. It is distinguished from the last by its more slender habit, and by its narrow glaucous leaves. It is from three to six inches high, and branched from the base.

13. **Caper Spurge** (*E. láthyris*).—Umbel of 3—4 principal 2-cleft branches; bracts heart-shaped and taper-pointed; leaves linear-oblong, sessile, upper leaves heart-shaped at the base; glands of the involucre crescent-shaped, with blunt horns; capsules smooth; seeds rough; biennial. This plant is to be found in thickets and among underwood in many parts of the country. In most of these places it may be regarded as rather naturalized than indigenous; but Mr. Babington says, that it is truly wild in a few stony and rocky woods, where it appears for two or three years after the bushes have been cut. It is often seen in gardens, and was formerly much cultivated. It is easily distinguished from our other species; it is taller than either of them, and looks like a small shrub, though truly herbaceous, but it is two, three, or even four feet high, and branched. It has

1. SEA SPURGE.
   Euphorbia paralias.
2. PORTLAND S.
   E. portlandica.
3. PETTY S.
   E. peplus.
4. DWARF S.
   E. exigua.

not the usual bright green of our native Spurges, its foliage being of a deep, dark sea-green hue, covered with whitish bloom, and often a good deal tinged with purple. Its large heart-shaped, taper-pointed bracts are very conspicuous; and it has very large capsules, which, like all the rest of the plant, are full of milky juice. Its green flowers are produced in June and July. The plant is used medicinally in several countries of the Continent, the dose being from twelve to fifteen of the seeds, and when skilfully administered, it proves a valuable remedy. The seeds are very acrid, yet they are sometimes pickled and eaten instead of capers with meat, but they are unwholesome. Their caustic properties are, however, doubtless diminished by being steeped in vinegar; for it is well known that the ancients were accustomed, after drying plants of this family, to steep them in vinegar to remove their acrimony; and by means of a similar process many of our otherwise poisonous plants, as toadstools, are rendered innocuous.

* * * *Bracts united at the base as if forming a perfoliate leaf.*

14. **Wood Spurge** (*E. amygdaloides*).—Umbel 5, or many-cleft, then 2-cleft; leaves egg-shaped, lanceolate, hairy beneath, entire; glands of the involucre yellow, crescent-shaped, with 2 horns; capsules minutely tubercled; seeds smooth; perennial. This plant is one of the handsomest of our native species, and is very frequent in woods and thickets. It is of a similar bright green colour to the Sun Spurge, and both in autumn and spring is remarkable for the purplish-red tinge on its stems and leaves. It is very pretty during March and April, when its stems, sometimes two feet high, are surmounted by its leaves and flowers of golden green. Towards the end of summer the plant becomes almost shrubby.

The Red Shrubby Spurge (*E. characias*), a large and handsome garden species, was formerly enumerated among our wild or naturalized plants, having been said to grow in Needwood Forest, Staffordshire, where, however, it is not now to be found; and it is believed that specimens of *E. amygdaloides* have been mistaken for it.

3. Box (*Buxus*).

Common Box (*B. sempervirens*). — Leaves oval, oblong, tough, shining above, foot-stalks fringed; anthers egg-shaped, arrow-shaped; perennial. All are familiar with the dwarf variety of the Box, as seen in the garden, where it forms an edging; and in many gardens the Box is to be found growing into a shrub, or even a good sized tree. But we do not often see the Box-tree wild in our woods, except on some dry chalky hills in the south of England. Whether, indeed, the plant is truly indigenous is somewhat questionable, but we may certainly claim for it a long-established place in this kingdom, since Boxley in Kent, Boxwell in Gloucestershire, and Boxhill in Surrey, evidently received their names from the growth of the plant in their neighbourhoods; and the latter spot is still richly decked with this tree.

The Box-tree looks exceedingly well in shrubberies, from the contrast which it affords by its yellowish-green hue to hollies and other evergreens.

Both the older and modern poets have compared it to the pale aspect of man. Chaucer says—

> "Wherewith the fire of jealousy up sterte
> Within his brest, and hente him by the herte,
> So woodly, that he like was to behold
> The Box-tree, or the ashen ded and cold."

Dryden thus renders a similar image—

> "He withers at his heart, and looks as wan
> As the pale spectre of a murder'd man,
> That pale turns yellow, and his face receives
> The faded hue of sapless boxen leaves."

Evelyn describes the luxuriant growth of the Box on our hills in his day. "These trees," he says, "rise naturally at Boxley, in Kent, and in the county of Surrey, giving name to that chalky hill (near the famous Mole, or Swallow) whither the ladies and gentlemen, and other water-drinkers from the neighbouring Ebbisham Spaw, often resort during the heat of summer, to walk, collation, and divert themselves in those antilex natural alleys and shady recesses among the Box-trees, without taking any such offence at the smell, which has of late banished it from our groves and gardens." He adds, that "whole woods of these trees for divers miles in circuit, look beautiful in winter on some of our highest hills in Surrey, and so singular, that the observer could imagine himself in some other country than England." The Box-tree still grows in plenty on Box-hill among the juniper bushes, but it is not in nearly so great profusion now, for an immense number of the trees have been cut down from time to time to supply wood for the blocks of the engravers; and for many years this spot has contributed largely of this valuable wood for this purpose. It now occurs without cultivation in a few places only, and there is much reason for believing that the Box was originally planted on all the hills of this kingdom where it once grew so freely. It is not improbable that the Romans may have reared it for its use at civic or religious festivals. One of our oldest English writers on plants, Turner, says of it, when writing in 1551, "It groweth on the mountains of Germany plentifully, wild, without any setting; but in England it groweth not by itselfe, in any place that I know, though there is much in England." John Ray and Gerarde, however, both considered it a native plant.

The Box is wild in most parts of Europe, from Britain southwards; and in many parts of France and Switzerland it is very abundant as a thick undergrowth among other trees, but not forming a forest by itself. It abounds also in many countries of Asia; and Poncet comments on the beauty of the Box-trees which grew on the banks of the rivers in Abyssinia, and which he describes as of surprising thickness, and as tall as beech-trees. It is a favourite tree of the Asiatics, who call it *Shumshad*. It is plentiful on Mount Caucasus, and extends even to the Himalayan Mountains, where it grows to a great size. The Box is mentioned in Scripture, and modern botanists believe the rendering of our early translators to be correct. Thus the Prophet Isaiah says with reference to the future Temple: "The glory of Lebanon shall come unto thee, the fir-tree, the pine-tree, and the Box together;" and again, "I will set in the desert the fir-tree, and the pine,

1. CAPER SPURGE
Euphorbia lathyris
2. WOOD S.
E. amygdaloides
3. RED SHRUBBY S.
E. characias
4. BOX
Buxus sempervirens

Pl. 197.

and the Box." As the Box is peculiarly a tree of mountainous regions, and well fitted to the calcareous soils of Mount Lebanon, and as its wood is hard and firm, it seems likely that it would be brought with the firs and pines for the service of the builder, while, by its beauty and its hardy nature, when contrasting with the dark firs, it would be well adapted for removing the dreary aspect of the desert. The ashur-wood, too, is believed to be the Box. The Prophet Ezekiel, when referring to the magnificence of Tyre, describes the benches of the rowers as made of ashur-wood, inlaid with ivory; and Virgil and other ancient writers allude to the practice of inlaying Box-wood with this material.

The Box-tree was, both in this country and in Rome, used for cutting into various forms. Pliny the younger relates how he had at his country seat Box-trees cut into the forms of men on horseback, a hunter with his hounds, quadrupeds, vases, and other objects; and mentions that one Box-tree was so large as to be cut into different apartments. Martial mentions clipped Box-trees as ornamenting the gardens at the house of Bassus. From our own old writers we learn that the topiary art came into practice in this country at the commencement of the sixteenth century; and Lawson, who wrote at the close of it, remarks, that the lesser wood might be framed by a gardener to the shape of men armed in the field, "ready to give battel, or swift running greyhounds, or of well-scented and true-running houndes to chase the deere, or hunt the hare." "This kind of hunting," he quaintly adds, "shall not waste your corne, nor much your coyne." The taste for these verdant sculptures was at its height in the seventeenth century, but after that time most lovers of gardens came to agree with the sentiment of Lord Bacon, who says, "I, for my part, do not like images cut out of juniper or other garden stuffe, they be for children."

The wood of the Box is very valuable, and very durable; and, as Virgil said—

> "Smooth grain'd, and proper for the turner's trade,
> Which curious hands may carve, and steel with ease invade."

The ancients prized it very highly for musical instruments, and the word *Buxus*, the name of the tree, also denoted a flute. The town of St. Claude, in France, is almost entirely inhabited by turners, who make from the wood obtained from the trees of the large Box-wood in their neighbourhood, rosaries, beads, salad forks and spoons, snuff-boxes, and other articles, which, by various modes of preparation, are made to resemble the beautiful turnery called Tunbridge ware. It was formerly much used, both in France and England, for inlaying in other wood.

Arthur Young mentions that in some parts of France the Box was cut down from the mountains, and laid as manure around the roots of the mulberry-trees with very good success. The leaves of the tree are deleterious to animals, and are generally refused by them, though camels sometimes eat them, and die in consequence. They possess sudorific properties, and made into a tincture, they formed a once much celebrated medicine for intermittent fevers. A German empiric, who made this medicine, long kept its ingredients a profound secret, but Joseph II. purchased the recipe at the expense of fifteen hundred florins. No sooner, however, was it ascertained that the

medicine was made of Box-leaves, than it lost all its repute; its hold on the imagination was gone, and its effects on the sufferer were lost. The decoction has doubtless powerful sudorific properties, and its taste is slightly bitter. Pieces of the wood of this tree are in France used in brewing, instead of hops; and an infusion of Box is said to strengthen the hair. The honey of Corsica was once believed to have been rendered unwholesome from having been gathered by the bees from the flowers of the Box. Bacon says, "It seemeth there was, in old times, tree honey, as well as bee honey; insomuch as one of the ancients relateth, that in Trebisonde there was honey issuing from the Box-tree, which made men mad." Modern commentators on the classics, however, believe that the noxious honey of Trebisonde was gathered from the rhododendron.

The Box-tree looks very pretty in May and June, when its numerous small greenish-yellow flowers grow among the leaves. We have often wondered that the tree is not more frequently cultivated, for it is an evergreen, and will thrive in most gardens. It must, however, be admitted, that the man who plants it either for use or beauty, can scarcely himself expect to sit beneath its shadow, or to profit by its wood; for it grows very slowly. Its boughs were, in olden times, regularly gathered at Whitsuntide, for decking the large open fire-places of our ancestors; and it was formerly used instead of the willow on Palm Sundays. An instance of the great antiquity of this practice is given in the Domesday Book, the records of which show that the tenant rendered as part of his payment a bundle of Box twigs for Palm Sunday. The old custom of each mourner carrying a sprig of Box at a funeral, and throwing it in the grave, still lingers in the north of England; and Wordsworth, referring to the practice, says:—

> "Fresh sprigs of green Box-wood, not six months before,
> Filled the funeral basin at Timothy's door."

In Turkey also, the widow, who goes weekly to pray at the tomb of her husband, plants a sprig of Box at the head of the grave.

The French call this tree *Le Buis;* the Germans, *Der Buchs;* while the Dutch term it *Palm.* It is the *Busso* of the Italians, and the *Box* of the Spaniards.

Order LXXVII. URTICACEÆ—NETTLE TRIBE.

Stamens and pistils usually in separate flowers, and in some cases on separate plants; flowers rarely perfect; perianth divided, not falling off, sometimes wanting; stamens equal in number to the lobes of the perianth, and opposite to them; anthers curved inwards in the bud; ovary 1, simple; fruit a hard and dry 1-seeded capsule. This order comprises trees, shrubs, and herbs with stipules, some with milky juices, and some with stinging hairs. Though we have but few British genera in this order, yet some very valuable and remarkable exotic plants belong to it.

1. URTICA.—Stamens and pistils in separate flowers on the same or different plants; barren flower, perianth of 4 equal segments, stamens 4;

fertile flower, perianth of 4 unequal segments, 1-seeded. Name from the Latin *uro*, to burn, from the stings.

2. PELLITORY (*Parietária*).—Stamens and pistils mostly in the same flower; perianth 4-cleft; stamens 4; filaments at first curved inwards, finally spreading, with an elastic spring; fruit 1-seeded. Name from the Latin *paries*, a wall, from its place of growth.

3. HOP (*Húmulus*).—Stamens and pistils on different plants; barren flowers in panicles, perianth of 5 sepals; stamens 5; fertile flowers in pairs in the axils of large scales, which form a catkin-like head, each containing 2 styles and 1 seed. Name from the Latin *humus*, rich soil, in which the plant thrives.

1. NETTLE (*Urtica*).

1. **Roman Nettle** (*U. pilulífera*).—Leaves egg-shaped, or heart-shaped, tapering to a point, with transverse nerves, coarsely toothed; clusters of fruit globose, stalked; seeds granulate; annual. A variety of this Nettle, the *U. dodartii* of Linnæus, has egg-shaped, or egg-shaped lanceolate leaves, nearly entire. It is described as growing at Copford, in Essex; Upwell, Norfolk; and Wisbeach, Cambridgeshire; but is probably not truly indigenous. The Roman Nettle is a rare plant in this country, and found about towns and villages, near walls or ruins, or on heaps of refuse. It occurs more frequently near the sea-coast of the eastern counties than elsewhere. It is remarkable for its stalked clusters of globose fruits. The plant grows on the Denes, near Lowestoft. Parkinson says, "It hath been found growing of old at Lidde by Romney, and in the streets of Romney in Kent"; but the plant is not now found at all in that neighbourhood. Camden tells us, that the Roman soldiers under Julius Cæsar, having landed at Romney, where they remained some time, sowed there some seeds of the Roman Nettle, which they had brought from Italy. He adds, that having heard much of the coldness of our climate, they thought it was not to be endured without some friction that might warm their blood; they therefore used this Nettle to warm and chafe their benumbed limbs. But Roman skins must have been little sensitive if they could derive any comfort from the application, for the stings of this species are far more virulent than those of our common Nettle. It is a tall and large plant, and bears its green flowers from June to August.

2. **Great Nettle** (*U. dioica*).—Leaves egg-shaped and heart-shaped, serrated; flowers in axillary spikes, much branched, longer than the leaf-stalks; seeds smooth, opaque; perennial. There are few who have not known in early days the pain caused by the sting of the Nettle—few who have not at some time or other had the skin reddened and blotched by its virulence. Both the English and Latin names of this genus refer to these stings, for the word Nettle is but an alteration of the Anglo-Saxon *netel*, which is itself a derivation from *nædl*, signifying in the same language a needle; while the Latin name is from *uro*, to burn. The sting of the Nettle is a tubular hair, perforated at or near its extremity, and in its whole structure resembling the fang of a serpent. Its point is extremely hard and brittle, and readily pierces the skin, while at its base, among the cellular substance

of the leaf, is placed a gland full of a caustic liquor, which has been ascertained by M. de Candolle, jun., to be of an alkaline nature. As the surface of the skin comes in contact with the point of this hair, and presses it down on the gland, the juice rises through the tubular hair, and, entering the skin at the punctured part, causes the pain. The sting is an interesting object beneath the microscope, and in one of the earliest books ever written on that instrument we find a reference to it. In 1664 Dr. Henry Power published his "Experimental Philosophy," in three books, containing "New Experiments, Microscopical, Mercurial, and Magnetical." The Doctor desires his readers to look through the microscope at the under side of a Nettle leaf, "And then," he says, "you shall find it all full of needles, or rather long transparent pikes; and every needle hath a crystal pummel, so that it looks like a sword-cutler's shop, full of glittering drawn swords, tucks, and daggers, so that here you may autopically see the causes, as well as you have formerly felt the effects, of their nettling. Something like them appear the prickles on Borrage leafs and stalks."

Powerful, however, as are the effects of our own Common Nettle, yet its virulence is slight when compared with that of the large species of hot climates, the glands of which secrete a greater quantity of a yet more venomous juice. Sir Joseph Hooker, when in Nepal, remarked that the number of gigantic Nettles (*U. heterophyllum*) on the skirts of the maize-fields was quite wonderful, their long white stings looking most formidable. Though their sting produced much pain, yet its effects only lasted half an hour; but he adds that these Nettles, with the leeches, mosquitoes, and other stinging insects, keep the traveller in a perpetual state of irritation. This species, however, was an open enemy, showing to all who would look at it the dangers with which it was beset, and thus deceiving none, reminding us of the old proverb, "Better be stung by a Nettle than pricked by a rose"; while another and still more gigantic species was far more dangerous without being so terrible in its aspect. No silvery needle-like stings in this plant arrested the gaze, for its stinging hairs were microscopic, and confined to the young shoots and the stalks of the leaves and flowers. Large masses of this great shrubby Nettle (*Urtica crenulata*) grow at Singtam to the height of fifteen feet, having broad glossy leaves. The plant is called in that country *Mealum-ma*, and so great is the dread of the natives regarding it, that this traveller had much difficulty in obtaining their aid in cutting it down. Dr. Hooker says, that he gathered many specimens without allowing any part to touch his skin, still the scentless effluvium was so powerful, that it caused very unpleasant effects for the rest of the day. "The sting," he remarks, "produces violent inflammation, and to punish a child with *Mealum-ma* is the severest Lepcha threat." Violent fevers and even death have been said to result from the sting of this plant; but Sir Joseph doubts the truth of this statement. This Nettle has long been known in India; and M. Leschenault, in his "Mémoires de Musée," describes the effects of being stung by it in the Botanic Garden of Calcutta. He at first experienced only a slight pricking sensation in the fingers which had come in contact with the plant. In the course of an hour the pain became intolerable, and though there was little to be seen on the skin, yet he felt as if his fingers were being

1. COMMON HORNWORT.
   Ceratophyllum demersum.
2. UNARMED H.
   C. submersum.
3. ROMAN NETTLE.
   Urtica pilulifera.
4. SMALL N.
   U. urens.
5. GREAT N.
   U. dioica.

rubbed by a hot iron. The pain finally extended up the whole of the arm, and so affected the lower part of his face as to threaten lockjaw. He endured this torture through the whole night, after which the pain gradually lessened, though for nine days after he was not wholly free from it. The Nettle of Timor, which is called *Daoun Setan*, or Devil's Leaf, the *U. stimulans*, produces effects which are described as lasting for a year, and which often prove fatal. Sir Joseph Hooker found that the *U. crénulata* only stings at one season of the year, and may be gathered with impunity at any other. He adds, that Endlicher attributes the causticity of Nettle-juice to bicarbonate of ammonia, which he, as well as Dr. Thompson, ascertained not to be present in this species. The Nettles of Van Diemen's Land are large and virulent Colonel Munday says of the *U. gigas*, that it is forty feet high, and its stem nine or ten feet in circumference, while the leaf is as large as that of the dock, and beset with hairs which look like so many shining steel needles. Our own wild Nettles may, with the exception of the rare Roman Nettle, be safely handled if seized courageously, and grasped firmly, but the hand must be passed upwards so as to lessen the pressure upon the stings.

It is some consolation, while thinking of the stinging nature of the Nettles, to remember that they are far from being useless plants. In their dried state they are fed upon by sheep, and growing on the pasture, cows will eat them, especially when herbage is scanty. A recent writer in an agricultural journal remarks, that he has seen Nettles cut up and mingled with wheat-straw as food for horses; and adds, that when thus prepared they furnish as good a food as tares, and that the horses not only throve upon the food, but seemed to like it. The young tops of our common Nettle are boiled and eaten by country people, and have been in some cases cultivated for the table; for Walter Scott, who well knew the habits of his countrymen, represents Andrew Fairservice as saying, "Nae doubt I should understand my ain trade of horticulture, seeing I was bred in the parish of Dreep-daily, near Glasgow, where they raise large kail under glass, and force early Nettle for their spring kail." A modern authority in matters of food, M. Soyer, considers that the Nettle makes an excellent dish, and even recommends that it should be gathered and carried into towns for sale. A little butter and gravy are, he says, to be added to the dish, and the vegetable may be eaten with or without poached eggs. We have ourselves in childhood often supped on a dish of Nettle-tops boiled for about twenty minutes, and eaten with salt and vinegar. They seemed delicious, but their flavour may have been improved by the fact of their having been gathered during a long country walk, and by our having watched them during the process of cooking. Some similar associations may have added a charm to the Nettle-soup made in the Highlands, and for which we have known a Highland friend to express during illness a great desire, and a lament that no Englishwoman knew how to prepare so pleasant and salutary a dish. It seems that the natives of Siberia have learned the value of the Nettle as food; for Sir George Simpson, in his "Overland Journey round the World," says, when referring to that country, "In the course of my rambles, I saw a good deal of land under cultivation with valuable crops of wheat, barley, oats, rye, potatoes, hops, and flax. I had often heard of Nettle Kail in

Scotland, and perhaps eaten of it, but never till I visited the banks of the Lena had I found Nettles artificially grown as greens. At Sitka I had partaken of them dried and preserved, and to my taste they were an excellent vegetable." The foliage of the Nettle is sometimes, in villages, cut up for the food of turkeys; and a rennet made of a strong decoction of Nettles, of which three pints are added to a quart of salt, is often kept in bottles for use. Of this liquid about a tablespoonful is put into a large bowl of milk, which readily coagulates, forming a very pleasant beverage, quite free from any flavour of the Nettle.

The Nettle is an astringent, and was of old times much used medicinally; while in country places a decoction of its leaves is still commonly employed as a gargle for sore throats. Dr. Thornton says, that its seeds will cure goitre, and recommends that about fourteen or fifteen of these ground to powder should be daily taken for this purpose. The plant was also much used as a styptic. Even the stings have proved serviceable in some maladies; and we have the authority of Mr. Purton, an excellent medical botanist, for saying, that a Nettle leaf pressed against the roof of the mouth is very efficacious in stopping the bleeding of the nose; and that this leaf, producing as it does a considerable irritation on the skin, has been employed as a rubefacient, and found of use in restoring torpid or paralytic limbs; a mode of treatment which is termed urtication. We have seen these leaves placed in the basket of plums gathered in the Kentish orchards, and been told by the fruit-pickers, that this manner of packing best preserved the "bloom" on the plums. In the same way, the gardeners pack grapes for the London market with the leaves of cucumber; and doubtless, the reason in both cases is, that while the leaf preserves the coolness of the fruit, it is kept from too close a contact, by the numerous hairs on the surface. The roots of the plant boiled with alum will dye wool of a good yellow colour. The juice is also useful for stopping the leakage of wooden vessels. Before the rents are large, they should be well rubbed with handfuls of the leaves, and the juice entering into the small crevices, soon coagulates so as to prevent the escape of the contents of the vessel. The rubbing must be continued more or less, according to the shrinking of the wood, and in a few minutes a very successful result is produced by the process. In Sweden, large quantities of Nettles are planted in rows as food for cows.

The fibres of the Nettle are so tough and strong, as to be scarcely inferior to those of the Hemp. They are commonly, in the north of Europe, woven into cloth and cordage; and those of one plant of the family are made into that beautiful muslin now so much prized as Nettle-cloth, or Grass-cloth. This is produced from the *Bohmeria nivea*. Its fibres have, from time immemorial, been used in China for the manufacture of this delicate fabric, which is well known also all over India, and is about the texture of fine cambric; making excellent clothing for hot countries. The fibres are also wrought into sewing thread, and as they will take a rich dye, they are used for a variety of ornamental purposes.

Nettle-fibre has been long used in Siberia, in making paper, and a very superior paper has been manufactured in Germany from this material. A few years ago it was tried in England, but the fibre is considered very inferior

to that of linen, hempen, or woollen rags for this purpose. Almost any fibrous substance may be made into paper, but it may be either too weak, or brittle, or spongy, or it may be badly coloured; while in many cases the cost of procuring and preparing the material renders it too expensive. Jacob Christian Schäffer, the pastor of Ratisbon, who about a hundred years since published a little book on the manufacture of paper, printed its contents on paper made of various materials. The barks of the willow, aspen, beech, hawthorn, lime, and mulberry, all contributed their fibres; while the silky down of willows and poplars, and the tendrils of the vine, as well as mosses, lichens, Nettle-stalks, fir-cones, reeds, and even saw-dust, were used by the enthusiast Schäffer; and among them all, it is probable that the Nettle-fibre proved one of the best materials for his purpose. None of his papers, however, are suited to the taste of our day, when readers and writers have been so long accustomed to paper of a superior description.

Our Nettle-leaf is said to be poisonous to frogs, which is much like saying that hot rolls are poisonous to earthworms; for the frog is an insectivorous creature, and not likely ever to partake of Nettle-leaves. To the insect world it is an important source of food. The caterpillars of some of our loveliest summer and autumn butterflies feed upon it. The pretty Small Tortoiseshell butterfly (*Vanessa urticæ*) takes its name from the plant; and its greenish-black caterpillar with yellow stripes, and spiny as the Nettle itself, feeds upon the plant. During June and July, we often find on the Nettle the greenish-black spiny caterpillar which will one day emerge in the form of the beautiful Admiral butterfly (*Vanessa atalanta*); and, rolled up in a little home which he has woven of silken threads, by drawing together the edges of the Nettle-leaf, he eats from the walls of his own dwelling till it is no longer habitable. But the next Nettle-leaf will serve him for another home till, clad in all the glory of his wings of black, scarlet, and white, he wends his way to the flowers around. Not far distant we may sometimes find the shining black caterpillar, whose coat is studded with white points, and who is regaling himself on the Nettle-leaf, while awaiting the purplish wings with their radiant spots, which shall make him known to all beholders as the Peacock butterfly (*Vanessa io*).

The Common Nettle grows all over Europe, about ruins and in hedges, as well as in neglected fields and pastures, marking "the field of the slothful," described by the wise man; though, as Shakspere has said—

> "The strawberry grows underneath the Nettle,
> And wholesome berries thrive and ripen best
> Neighbour'd by fruit of baser quality."

It is sometimes three feet high, and bears its greenish spikes, often tinged with purplish-brown, from May to October. Nettle-flowers are not fertilized by insects, but owing to the male and female flowers being borne on separate plants cross-fertilization always takes place, the wind being the carrying agent. To aid in this process the stamens behave in an interesting manner; in the flower-bud the filaments lie coiled up with the anthers in the centre of the flower, but when this has opened widely and the anthers are ripe, the filaments suddenly straighten out with sufficient force to scatter the

pollen in a little cloud, which is borne by the wind to plants bearing the fertile flowers. The French call it *L'Ortie;* and the Germans, *Die Brennessel.* It is the *Brandenetel* of the Dutch, the *Ortica* of the Italians, and the *Ortiga* of the Spaniards.

3. **Small Nettle** (*U. úrens*).—Leaves opposite, elliptical, serrate; spikes axillary, nearly simple, two together, shorter than the leaf-stalk; seeds smooth, opaque; annual. This species is readily distinguished from our other Nettles by its smaller size. It is rarely more than a foot high, and its foliage is of a brighter green than that of the common species. The small Nettle bears its green flowers from July to October, and springs up abundantly by the borders of fields and meadows, in churchyards, and neglected gardens. Though decidedly a stinging Nettle, it is not so powerful as the larger species.

2. Pellitory of the Wall (*Parietária*).

Common Pellitory (*P. officinális*). — Leaves oblong, oval, or egg-shaped, lanceolate, narrowed at both ends, 3-nerved above the base; involucre of two 3—6-lobed segments, with an alternating bract, 3—7 flowered; flowers sessile, that between the segments with a pistil only, others containing both stamens and pistils, at length tubular, coloured, and longer than the stamens; perennial. In one form of this plant the stems are generally spreading, but in a less common variety they are quite erect. The Wall Pellitory is a much-branched herbaceous plant, with narrow hairy leaves, and reddish brittle stems. Its small hairy flowers grow, throughout the summer, in the axils of the leaves, and are of a reddish hue, and the filaments are jointed and elastic. They are remarkable for their irritability; for, if touched with a needle before the full expansion of the flower, they suddenly fly open with considerable force, and scatter their pollen, much after the manner of the Nettle stamens.

The plant grows often on ruins, churches, and old walls—

> "Where the abbey's height appears,
> Hoary 'neath a weight of years,
> Where the mouldering walls are seen
> Hung with Pellitory green;
> Where the steeple's taper stretch
> Tires the eye its length to reach,
> Where the cross, to time resign'd,
> Creaking harshly on the wind,
> Crowning high the rifted dome,
> Points the pilgrim's wish'd-for home."

It is found, besides, on sea-cliffs. It contains in its juices so large a quantity of nitre, that, in preparing an extract from the plant, the mass has sometimes taken fire. It is a favourite village medicine, and one of old renown, yet its sanative properties are really very slight, though the decoction is somewhat cooling.

Chaucer refers to it:—

> "His forehead dropped as a stillatorie,
> Were full of plantaine, or of Paritorie.

Farmers often place this plant among heaps of corn infested by weevils,

1 PELLITORY OF THE WALL.
Parietaria officinalis.

2 HOP.
Humulus lupulus.

3 COMMON ELM.
Ulmus suberosa.

4 BROAD-LEAVED E
U. campestris.

and it is believed quickly to rid the grain of this destructive insect. The herb was formerly called Wall-wort. Gerarde says: "Some call it *Perdiceum*, of partridges, which sometimes feed hereon; some *Urceolarius* and *Vitraria*, because it serveth to scoure glasses, pipkins, and such like. In Spain they call it *Yerba del muro*." He adds that it is good for coughs. The French term the plant *La Pariétaire*, and the Germans, *Das Glaskraut*. It is the *Glaskruid* of the Dutch, and the *Noc i dzien* of the Poles. Mr. Curtis remarks of this herb, that the same degree of cold (31° Fahrenheit) which strips the mulberry of its leaves, will destroy the herbage of the Pellitory.

3. Hop (*Húmulus*).

Common Hop (*H. lúpulus*).—Stems rough, long, and twining; leaves opposite, stalked, 3—5-lobed, serrated, veiny, rough; fertile flowers in a catkin-like head; barren flower of 5 segments and 5 stamens; perennial. Those who have dwelt or travelled in any of our Hop counties, as Kent, Sussex, or Hereford, in the autumnal season, need not be reminded of the beauty of the Hop-garden, or of its delicious fragrance. We have, in our summer walk, many sweet scents wafted to us by the breeze from honeysuckle hedges and flowering bean-fields, from the hay lying outspread on the meadow, from blossoming broom and briar roses, or, stronger still, from fields of lavender, which spring up to reward the grower's toil; but not one of the summer odours can equal that which, in September and October, fills the Hop-garden with incense, and may be enjoyed long ere we approach its bounds. It is a picturesque scene, too, when the tall plant, covered with its golden cones, is gathered by the Hop-picker, and when we may see men, women, and little children, working beneath the blue sky at their employment, while the cradled infant sleeps the sounder from the soothing influence of the Hops which hang over its head. The toil is not a wearisome one, and is lightened by the pleasant air and social intercourse, while often among those pickers may be found someone who has come hither from the distant town to seek the long-lost health, and has found it here.

Though the Hop under cultivation has several varieties, and the grower in Kent, Sussex, and Surrey talks with enthusiasm of his Goldings, or Whitebines, or Grapes, or Colegates yet these have all originated from one species. Some botanists doubt whether the Hop is really wild, and is not rather to be regarded as a plant long since naturalized in this country; but Mr. Babington, and many others, consider it as a true native in many parts of England, and Dr. Bromfield thinks it indisputably indigenous to the southern counties. In many parts of the kingdom, the wild Hop twines luxuriantly in woods and hedges, interlacing the shrubs with its long stems, and hanging among their boughs its wreaths of large rough leaves, and its fragrant cones. These are smaller, and of a paler yellowish-green hue than those of the cultivated Hop. They grow in little clusters during July, August, and September; while the barren flowers, which are of the same greenish tint, resemble the blossoms of the currant-bush in form, but are not nearly so numerous in the cluster. That the cultivated Hop was brought into the Hop-gardens of this kingdom from the Low Countries, or from Artois, in the reign of Henry VIII., is a well-known fact, and as the two old lines record—

"Hops, reformation, bays and beer,
Came into England all in one year."

But there is no evidence to show that the wild plant was not then in our hedges. Our English name of the plant is derived from the Anglo-Saxon *hoppan*, to climb, and is very expressive of its habit. It is called also *Hopfen* in Germany; and *Hoppe*, in Holland.

In the "Promptorium Parvulorum," or Anglo-Latin Dictionary, we find the word *Hoppe* described as "sede for bere"; and the learned Editor, Mr. Albert Way, remarks on this: "It should seem that the *Eala* or *Swatan* of the Anglo-Saxon was not compounded with any bitter condiment, which was essential to the concoction of beer, a drink of Flemish or German origin, and, until the sixteenth century, imported from the Continent, or brewed by foreigners only in this country. The 'Promptorium' gives BERE, *cervisia hummulina*, as distinguished from ale, which was not hopped. Caxton, in his 'Boke for Travellers,' speaking of drinks, makes the distinction, 'Ale of England, Byre of Alemayne;' and it appears, by the 'Customs of London,' Arnold's Chronicle, 87, that beer was first made in London by 'byere brewars, straungers, Flemyngis, Duchemen,' etc. A recipe for making single beer with malt and Hops is given (p. 24). It has been asserted that the use of Hops was forbidden by Henry VI., in consequence of a petition of the Commons, mentioned by Fuller in his 'Worthies,' under Essex, against the 'wicked weed called hops;' but no record of the prohibition has been found, and the petition does not appear in the rolls of Parliament." It is well known that in the time of Henry VIII., and for many years later, a prejudice was entertained against Hops; and Evelyn laments that their use was "transmuting our wholesome ale into beer." In 1531, when "sundry misuses" in the royal household were considered to need reform, an injunction was given to the brewer not to put any Hops or brimstone into the ale. Mr. Way remarks "Bullein, in the 'Bulwarke of Defence,' written about 1550, speaks of Hops as growing in Suffolk. They are mentioned in the Statutes of Edward VI. (1552), as cultivated in England. Among the privileges conceded to the strangers from the Low Countries, who settled at Stamford in 1572, is a clause regarding the free exercise of husbandry, in which are specified Hops, and all things necessary to gardens." Some of our early proverbs also refer to the plant. Thus—

"Till St. James's Day be come and gone,
There may be Hops, or there may be none."

The opinion of our forefathers that Hops "would spoyle the taste of drink and endanger the people," has long since passed away. Lupulin, or the principle of the Hop, is now known not only to impart an agreeable and aromatic flavour to beer, but also to possess tonic and soporific properties, as well as to prevent, by arresting fermentation, the liquor from becoming sour. The narcotic properties of the Hop have a soothing effect; and Hop-pillows have long been in use in cases of sleeplessness, nor can we spend many hours in the Hop-garden without being conscious of this effect of the fragrance. The young tops of the wild Hop are gathered, tied in bundles, and boiled, and we know from long experience that they form a pleasant vegetable

which is often compared to asparagus, though not much resembling it in flavour. The stalk and leaves dye wool of a yellow colour; and the fibres of the stalk, which in Sweden are made into a strong cloth and a coarse sacking, have been recommended as likely to afford a good material to the paper manufacturer. The roots are doubtless tonic, and are considered by some good botanists to be equal to sarsaparilla in their medicinal powers. The old herbalists regarded the juice of the Hop as of great value as a purifier of the blood, and they made of the plant distilled waters and juleps, which they regarded as highly beneficial. The leaves are often clammy to the touch, and the author has been informed by Mr. F. A. Paley that the viscid and bitter juice in the Hop clusters will cause serious inflammation if the skin is abraded. This gentleman saw a person whose arm was completely disabled by having been thus poisoned in hop-picking.

Hop-gardens, by the name of *Humolariæ*, are alluded to in a document of the Carlovingian dynasty in the early part of the ninth century, and frequently in documents of the thirteenth.

The word *humulus* is said to be derived from *humidus*, wet, or *humus*, fresh or damp earth, because the plant flourishes in moist lands; for, as Gerarde observes, "the Hop joyeth in a fruitful soil." Thus Tusser, who published his volume, the "Five Good Pointes of Husbandrie," in 1551, says:—

"Choose soil for the Hop of the rottenest mould,
Well doonged and wroght, as a garden-plot should;
Not far from the water (but not overfloune),
This lesson well-noted, is mete to be knowne.

"The sun in the south or else southlie and west,
Is joy to the Hop, as welcomed ghest,
But wind in the north, or else northerly east,
To Hop is as ill as a fray in a feast.

"The Hop for his profit I thus do exalt,
It strengtheneth drink and flavoureth malt;
And being well-brewed, long kept it will last,
And drawing abide if ye draw not too fast."

Pliny tells that the word *Lupulus* was a corruption of the old name of the plant, *Lupus salictarius*, the Willow Wolf; and that it is so called because it destroyed the willows by twining among them. Some writers have thought that it was taken from the word *lupinus*, as it is well known that the Egyptians used the lupin seeds to give a bitter flavour to their beer. Beckmann says, that neither the word *humulus* nor *lupinus* is of great antiquity.

The Hop grows in the hedges of most European countries, often climbing about trunks of trees to the height of twenty or thirty feet; and the French call it *Houblon;* the Italians, *Lupolo;* the Spaniards, *Hombrecillo;* and the Russians, *Chmel.* Some of the Hops used in this country are introduced from abroad.

Order LXXVIII. ULMACEÆ—ELM TRIBE.

Stamens and pistils in the same or different flowers; perianth bell-shaped, often irregular; stamens equalling in number and opposite to the lobes of the perianth; ovary not attached to the perianth, 2-celled; styles

and stigmas 2; fruit 1 or 2-celled, not bursting, drupe-like, or furnished with a leafy border; seed pendulous. The order consists of shrubs or trees, with rough stipuled leaves, and flowers in clusters, often important for their use as timber.

Elm (*Ulmus*).—Perianth bell-shaped, 4—9-cleft, persistent; stamens usually 5; styles 2; capsule thin and leaf-like. Name considered by Sir W. J. Hooker as derived from the Hebrew *ul*, to be strong or vigorous.

Elm (*Ulmus*).

1. **Common Elm** (*U. suberósa*).—Leaves tapering to a short point, more or less doubly serrate; flowers small, 4—5-cleft; segments fringed; fruit inversely egg-shaped, deeply cloven; seed-cavity chiefly above the middle of the fruit and near the notch; perennial. Several varieties of this tree occur in Great Britain, but their characters are not constant; in one the leaves are rough above and downy below, and small, being from one to three inches long, and this form is common throughout England. In the *Ulmus major* of some writers, a variety found in the neighbourhood of London, the leaves, fruit, and flowers are much larger, and from two and a half to five inches in length, and rough above and downy below; while in a form often described as *U. glabra* the leaves are somewhat leathery, shining, smooth or slightly rough above, and smooth except in the axils of the veins beneath: the young leaves, stipules, and fruit have scattered glands, and the branches are drooping. This form occurs chiefly in the south of England, while a variety similar to it in other respects, but having its branches rigid, erect, and close, is sometimes described as *U. stricta*. It is found in Cornwall and North Devon. The stately Elm is an early-leafing tree, yet its twigs are sometimes darkened by its innumerable flowers long before its leaf-buds have unfolded.

It is a large tree, one of the tallest to be seen in our English landscape; and its foliage, though rich and full, hanging so loosely as to form a chequered shade by the light which comes down between its dark masses. Its trunk is usually erect, and so rough, that Gray's epithet of the "rugged Elm" is very appropriate. The young branches are hairy; but, as they grow older, they become covered with the cracked rugged excrescence to which the species owes its name. The tree attains a great age, and when growing in a good soil it will live for five or six hundred years, and even then furnish good timber. Its wood is strong and close-grained, and being uninjured by water, is used in ship-building; the inner bark is made into bast, mats, and ropes, and in former times the foliage served as fodder for cattle—a purpose to which it is still applied on the Continent. The flowers are at first enveloped in scale-like buds, and the young twigs are thickly beset with them. They expand in March, and disclose the purple calyx with stamens of the same hue, and a cleft ovary bearing two styles. The tree seems covered with these flowers almost as thickly as it is afterwards clothed with leaves; and as the flowers wither, they are succeeded by the thin, membranous, notched seed-vessel, and the enclosed seed is borne, as on a wing, by the wild winds of early spring to the distant soil, or scattered by hundreds around the trunk of the tree. Clusters of these flat seed-vessels so invest the tree, that they look at a distance like foliage,

yet the seeds never mature in this country. In April the tender green leaves shoot out from the leaf-buds, and the boughs are clothed in a mantle of lively green, as Bishop Mant has said :—

"For lo ! by May's bright touch are seen,
Colour'd with varied tints of green,
Now deep, now dark, now pale and light,
Now almost fading into white,
Now brightening to a mellow'd shade,
The yellow bright, or russet red,
The offspring of the woodland realm ;
The glossy beech, the rougher Elm,
The waving birch-tree's silver bark,
And pallid lime, and alder dark,
Maple and willow's countless race,
Which clothed their forms with chequer'd grace
Of leafy garb before, have now
From stem to crown, each branch and bough,
Light twigs and open'd spray array'd,
With depth and plenitude of shade."

But though there are differences of hue in the foliage of May, yet these are not striking as in the later year. It is in the autumnal season that the Elm seems most beautiful, for its sere and yellow leaf has a tint of its own, differing from the yellowish-brown of the oak, the golden hue of the maple, the reddish or yellow tint of the willow, and the rich rust-coloured tinge of the beechen boughs.

The leaves remain long on the tree, but in autumn are often marked with dark spots. The winter winds strew the leaves over the ground, and then the spot increases till it bursts open and reveals the cause of the decay to be a minute fungus. Galls are also produced on the leaves by the puncture of a cynips, and each gall contains some drops of liquid, which has been called Elm-balm, and used in the cure of wounds. The Elm, indeed, is liable to the attacks of many enemies in the insect world, from the Elm-destroying beetle, which feeds on the inner bark, and in order to reach it pierces through the external covering, and gathers there in thousands, down to the Elm-flea, which, in its brilliant coat of green and gold, skips among the foliage, and devours the leaves with great rapidity, and which, aided by other insects, sometimes so injures a goodly Elm that it looks like a blighted tree.

The Elm has been celebrated by poets, both ancient and modern ; for many have told, like Chaucer, of—

"The Elmis great and small."

The ancients twined their vines around the Elm-trunks, and he who reared a vineyard was as careful of his Elms as of his vines. This "wedding of the Elm to the Vine" was a source of continual allusion among the Roman poets; and his classic lore suggested it to Milton, when describing the pleasant occupation of our first parents :—

"They led the Vine
To wed the Elm ; she, spoused, about him twines
Her marriageable arms, and with her brings
Her dower, the adopted clusters to adorn
His barren leaves."

Many very picturesque Elms are found in the neighbourhood of London

and other large towns, for this tree will bear an atmosphere which is unsuited to many others; and the magnificent Elms of Hyde Park and Kensington Gardens are highly prized by those who dwell in the crowded neighbourhood, affording, as they do, a welcome shadow. Thousands could say, with Milton—

> "Not always city-pent nor pent at home
> I dwell; but when Spring calls me forth to roam,
> Expatiate in our proud suburban shades
> Of branching Elms that never sun pervades."

Scattered over our country, too, are numerous Elms, interesting from their old associations. Mr. Jesse mentions that one of the Elm-trees standing near the passage leading from St. James's Park into Spring Gardens was planted by the Duke of Gloucester, brother to Charles I.; and that as the hapless monarch passed it on his way to Whitehall, on the morning of his execution, he pointed out the tree to one of his attendants. The Elm at Chipstead Park, in Kent, is remarkable for its great age and size, being sixty feet high, and having a base twenty feet in circumference. The Gospel Elm at Stratford-upon-Avon once served as a parish boundary, beneath whose shadow were read and sung those portions of Holy Writ which our fathers used in the processions of Rogation Day, reminding us of Herrick's lines:—

> "Bury me
> Under that Holy Oke, or Gospel tree,
> When, though thou see'st not, thou mayst think upon
> Me, when thou yearly go'st Procession."

Many compound names of places of which Elm forms a part are to be found in Domesday Book, the drawing up of which was concluded in 1086; and many well-known names yet seem to hint at the existence in olden times of Elms in their neighbourhood. We have Elm in Cambridgeshire and in Somersetshire; and Elmbridge, Elmdon, Elmer, Elmstead, Elmhurst, Elmham, and Elmington, in various parts of the kingdom; yet the Common Elm is, by many writers, not considered indigenous, and the small-leaved variety, which is found principally in Norfolk and Sussex, and which yields better wood than any other of our Elms, is said to have been introduced from Palestine by the Crusaders.

Our fathers drew from the leaves and roots of the Elms medicines for various disorders; both these and the bark have an astringent property, and are somewhat mucilaginous; while the chemists of modern days detect in them gallic acid and supertartrate of potash; and Klaproth obtained from the inner bark a peculiar principle called ulmine. The decoction of Elm-bark, used both as a lotion and internal medicine, has considerable repute as a remedy for diseases of the skin, and it was regarded in old times as "certainly very effectual to cleanse the skin and make it fair," while the water in which the root was boiled was used to prevent the falling off of the hair. Our ancestors were accustomed to bruise the leaves also, and lay them upon wounds; and the ground bark was considered a useful application to the gouty limb. The inner bark of the Elm is, in the North of Europe, commonly reduced to powder, and, mixed with meal, made up into bread; but it affords very little nutriment. The leaves were formerly much used in

adulterating tea, and silkworms have been fed upon them. Though the bark of this tree is very similar to that of the cork-tree, yet it is not adapted either in quantity or quality for being used instead of that material. The ashes of the Elm are rich in alkaline salts; and the knobs which grow on old trees are used by the cabinet-maker for ornamental furniture. The Elm-timber, being durable in water, is particularly suited for making water-pipes and piles for piers and bridges. This species is the *Ulmus campestris* of Smith, and the *U. carpinifolia* of Lindley.

2. **Broad-leaved Elm, Wych Hazel, or Wych Elm** (*U. campéstris*). —Leaves tapering much at the point, doubly serrated, usually rough above, and downy beneath; flowers 5—7-cleft; lobes fringed; fruit oblong or roundish, notched; seed-cavity chiefly below the middle of the fruit, and distant from the notch; perennial. This species is by some writers called *U. montana*, but is the *U. campestris* of Linnæus, and is distinguished by the relative position of the seed-cavity and the notch of the fruit; it has also very spreading branches; its leaves, which are broad and somewhat like those of the hazel, appear just as the hop-like fruit is matured. The tree is not so upright as the Common Elm; and there is a variety, called the Weeping Elm, in which the branches are pendulous. The flowers of this species appear in March and April. They are larger and paler in tint than those of the Common Elm, are arranged in looser tufts, and cut into five or six oblong acute segments of a purplish colour, with dark purple anthers.

The Wych Elm is common in woods and hedges, and is undoubtedly wild; and being the only species indigenous to Scotland, is often called Scotch Elm. It is a native of the northern and temperate parts of Europe, and grows to a great age, the "century-living crow" often building among its boughs. As Thomson wrote—

> "Should I my steps turn to the rural seat
> Where lofty Elms and venerable oaks
> Invite the rook, who high amid their boughs
> In early spring his airy city builds,
> And ceaseless caws amusive."

Gerarde says that it was in his day commonly called Witch Hazel, and he adds: "Old men affirm, that when long bows were in use, many were made of this tree, for which purpose it is mentioned in the English Statutes." Roger Ascham, however, did not recommend the wood for this purpose. The timber of this tree is very valuable, and is by some writers on naval architecture considered as scarcely inferior to that of the oak.

The lovers of picturesque scenery may welcome this Elm on the landscape, with its loosely-hanging boughs, clad with masses of foliage, full enough for richness, but not so crowded as to form a heavy outline. It has a bold and sturdy trunk, often covered with excrescences; and there is an ease and grace in its boughs, and a beautiful greenness or autumnal brown in its tint, which render it truly picturesque. Its bark is of a lighter hue than that of the Common Elm, and the tree rather resembles the oak in form. It grows more rapidly than the Common Elm; hence its timber is somewhat less valuable. Its seeds ripen in June. It flourishes in Scotland, not only in the plains and valleys of the Lowlands, but is hardy enough to brave the

winds on the mountain-steeps in the remotest Highlands, though it does not there attain a great size.

Several very large and handsome Wych Elms are well-known objects of interest, and Wych Elms in this kingdom have been recorded as growing to the height of one hundred and twenty feet.

The origin of the name of this tree is unknown; but it appears that several Elms, as well as this species, were in former days called Wych Elm; and it has been surmised that our Saxon ancestors so named them because Elms might have grown near their salt springs, which they called wych, or witch. It is probable that the similarity of the word to the name of witch led to some popular superstition connected with the tree, for dairymaids in the midland counties of England still gather a bough of this Elm and place it in the churn, that the milk may the more readily turn into butter.

Order LXXIX. ELÆAGNACEÆ—OLEASTER TRIBE.

Stamens and pistils in the same or separate flowers or on separate plants; barren flowers in catkins; perianth tubular; stamens 3—8, sessile on the throat of the perianth; fertile flower solitary, tubular, not falling off; ovary 1-celled; style short; stigma awl-shaped; fruit a single nut enclosed within the fleshy perianth. The order consists of trees or shrubs without stipules, but often covered with scurfy scales. The fruits of several species are eaten in the East, and the plants are found throughout the northern hemisphere.

Sea Buckthorn (*Hippóphaë*).—Barren flowers in small catkins; perianth of 2 valves; stamens 4, with very short filaments; fertile flowers solitary, perianth tubular, cloven at the summit; style short; stigma awl-shaped; fruit a 1-seeded nut. Origin of name uncertain.

Sea Buckthorn (*Hippóphaë*).

Sea Buckthorn, Sallow-thorn, or **Willow-thorn** (*H. rhamnóides*). —Leaves linear-lanceolate; flowers small, greenish; perennial. Those accustomed to walk in gardens near the sea, are familiar with this plant, for it often combines with the tamarisk to give greenness and shelter to the beds visited by rough and bleak winds. When cultivated, it sometimes becomes almost like a tree, with a thick woody trunk, twenty feet high, and numerous irregular branches; but when growing wild on the sea-cliffs and sand-hills about our coast, it is usually a thorny-branched shrub, not more than three or four feet in height. It is naturalized in Scotland and Ireland, but occurs as a native in various places on the English coast from Kent to Yorkshire; and on some, as on the south of Kent, it is common. It grows on the sands of Deal, and on the chalk both east and west of Dover, and near Folkestone. It is very plentiful, too, on the flat sandy line between Cromer and Yarmouth, in Norfolk, and is more or less frequent throughout Europe and Northern Asia. Though growing above the level of the tide-mark, yet it will bear an occasional dash of spray; and on some of our shores, and still more frequently on those of the Continent, it is planted with the sea-side grasses for the

1. SALLOW THORN
Hippophae rhamnoides
2. SWEET GALE
Myrica gale
3. BIRCH
Betula alba
4. DWARF B.
B. nana.
5. ALDER
Alnus glutinosa

purpose of holding down the shifting sands, and is most useful in this respect. The small, solitary, greenish, pistil-bearing flowers are tubular in form, and the barren flowers are placed in small cones, each scale bearing a minute flower. They expand in May, just before the bursting open of the leaves, or at about the same period. The narrow leaves are deep green on the upper surface and white beneath; while some of the boughs are of a silver colour, their shining surfaces looking almost metallic. In the Crimea the Buckthorn is planted, not only to bind the sands, but also that it may shelter the young fir-trees which are placed near it; and the Buckthorn there acquires great size and vigour. In Germany, where it grows well, cultivated plants are commonly twenty feet high; and a Sea Buckthorn which was planted at Syon Park, Isleworth, attained the height of thirty-three feet, and had a trunk whose diameter was eleven inches.

The berries of this shrub grow in numerous clusters among the leaves in September; they are rather larger than holly-berries, sometimes of a deep orange, at others of a much paler yellow, and they have a pleasant acid flavour. They are seldom eaten in this country, even by children, owing to the idea that they are unwholesome, yet they are perfectly harmless. The Tartar children eat great numbers of these fruits; and a preserve made of them, and served up with milk or cheese, is regarded in Tartary as a luxurious dish. The fishermen of the Gulf of Bothnia also make of these fruits a pleasant acid jelly, which they take with their fish, and a kind of fish-sauce is made from them in the south of France. In Dauphiny, as well as in Spain, they are, however, believed to be poisonous; and at Calais, where the Buckthorn is abundant on the sands, the fishermen refuse to touch the fruits, which they say, however, are greedily devoured by the sea-fowl. J. J. Rousseau relates an amusing anecdote respecting this plant. While botanising in the neighbourhood of Grenoble with a local botanist, he found this shrub, and gathered and ate the berries which were on its boughs. His companion, who regarded them as poisonous, was too polite to say so to one whom he deemed so learned; but he afterwards confessed, that while seeing these fruits eaten plentifully by Rousseau, he thought that death would certainly ensue. The land as well as sea birds make many meals of the berries, which continue on the shrub throughout the winter, and which, if untouched by birds, may be seen even in the early spring just when the spikes of buds are thickening on the bough.

The French call this shrub *L'Argoussier;* and the Germans, *Der Haftdorn.* It is the *Duinbessen* of the Dutch, the *Espino amarillo* of the Spaniards, and the *Rakitnik* of the Russians. Every part of the plant abounds in a colouring matter, which is used as a yellow dye.

Order LXXX. AMENTACEÆ—CATKIN-BEARING TRIBE.

Stamens and pistils in separate flowers, and often on different plants; barren flowers in heads or catkins, composed of scales; stamens 1—20, inserted in the scales; fertile flowers clustered, solitary, or in catkins; ovary

usually simple; stigmas 1 or more. This order consists of shrubs, and of some very valuable trees. It is divided into several sub-orders or groups, and four of these groups contain British species. The first sub-order, Myriceæ (Sweet Gale Group), has its flowers in catkins, and its ripe fruit assumes a drupe-like form, from being surrounded by the fleshy scales of the catkins. In Betulineæ (the Birch Group), the flowers are all in catkins, and the fruit is thin, flattened and dry, 1-celled, and containing one or two seeds without downy tufts. In Salicineæ (the Willow Group), all the flowers are in catkins, the fruit is a 2-valved capsule, and the seeds are tufted with down; while in the Cupuliferæ, the fertile flowers are in tufts or spikes, the barren flowers in catkins, and the fruit is either entirely or partly inclosed in a bony or leathery case, termed a cupula.

Sub-Order I. SWEET GALE GROUP (*Myriceæ*).

1. SWEET GALE (*Myrica*).—Stamens and pistils on different plants; scales of the catkin concave; stamens 2—16; stigmas 2; fruit drupe-like, 1-seeded. Name in Greek synonymous with the tamarisk.

Sub-Order II. BIRCH GROUP (*Bétulineæ*).

2. BIRCH (*Bétula*).—Stamens and pistils in separate flowers; scales of the barren catkins in threes; stamens 2; scales of the fertile catkin 3-lobed, 3-flowered; stigmas 2; fruit flattened, 1-seeded, winged. Name said, by Sir W. Hooker, to be from *betu*, the Celtic name for the Birch.

3. ALDER (*Alnus*).—Stamens and pistils in separate flowers; scales of the barren catkin 3-lobed, 3-flowered; stamens 4; scales of the fertile catkin 2-flowered, permanent, becoming hard and dry; stigmas 2; fruit flattened, not winged.

Sub-Order III. WILLOW GROUP (*Salicineæ*).

4. WILLOW (*Sálix*).—Stamens and pistils on different plants; scales of the catkin overlapping each other; stamens 1—5; stigmas 2; capsule of 2 valves, 1-celled; seeds numerous, with downy tufts. Name said, by Theis, to be from the Celtic *sal*, near, and *lis*, water.

5. POPLAR (*Pópulus*).—Stamens and pistils on different plants; scales of the catkin jagged; stamens 4—12; stigmas 2, 2—3—4-cleft; capsule of 2 valves; seeds numerous, with downy tufts. Name from the Latin *populus*, or the Tree of the People.

Sub-Order IV. MAST-BEARING GROUP (*Cúpuliferæ*).

6. BEECH (*Fágus*).—Barren flowers in a globose catkin; stamens 8—40; fertile flowers 2—4 together, within a 4-lobed prickly involucre; stigmas 3; nuts 3-cornered. Name in Greek, *phago*, from the eatable fruit.

7. CHESTNUT (*Castánea*).—Barren flowers in a long cylindrical catkin or spike; stamens 10—20; fertile flowers 3 together, within a 4-lobed very prickly involucre; stigmas 3—8; nuts 1—3 together, within the enlarged prickly involucre. Name from Castanea, in Thessaly.

8. OAK (*Quércus*).—Barren flowers in a long drooping catkin; stamens

10; fertile flowers with a cup-shaped scaly involucre; stigmas 3; fruit an acorn. Name from the Celtic *quer*, beautiful, and *cuer*, a tree.

9. HAZEL-NUT (*Córylus*).—Barren flowers in a cylindrical catkin; stamens 4—8; fertile flowers 1—2 together, in a scaly involucre; stigmas 2; fruit a nut in a jagged involucre. Name from the Greek *Korus*, a casque, or cap, from the form of the fruit.

10. HORNBEAM (*Cárpinus*).—Barren flowers in a cylindrical catkin; stamens 3—12; fertile flowers in a terminal spike; stigmas 2; nuts in pairs. Name from the Celtic *car*, wood, and *pin*, a head.

1. GALE (*Myrica*).

Sweet Gale, or Bog Myrtle (*M. gale*).—Leaves lanceolate, broader upwards, serrated; stem shrubby; catkins sessile, erect; perennial. This is sure to be a favourite plant in whatever spot it may grow. Both when fresh and dry, whether in leaf only or with its catkins, it is most deliciously fragrant; and it has many rustic names and much rustic repute. It is called Sweet Willow, Dutch Myrtle, Candleberry Myrtle, and in Hampshire is known as the Withy-wind, or Golden Withy. The powerful odour of the plant is well calculated to keep away insects; and country people place it among their clothes, both for this purpose and that it may impart to them its pleasant scent. They hang boughs of the shrub about the beds, and, in some parts of Scotland, fill the beds with the leaves. It is very astringent, and is used for dyeing wool; while in Wales it is sometimes mingled with bark in tanning. The catkins, when boiled, yield a quantity of wax, though not nearly so much as is afforded by the American candleberry myrtle, or wax-bearing myrtle (*Myrica cerífera*), from the wax of which excellent candles, soap, and sealing-wax are manufactured. Gerarde says of our native species: "The Gaule groweth plentifully in the Isle of Ely, and in the fenny countries thereabouts, whereof there is such store in that country that they make fagots of it, and sheaves which they call Gaule sheaves, to burne and heate their ovens." The dried berries are put into broth, and used in some parts of France as spices; and the plant is there called *Galé* and *Pimento Royal*.

But of all the economic purposes to which our Gale has been applied, none are so important as its use in making ale. From time immemorial it has been used, especially by the nations at the north of Europe, very extensively for this purpose. In very early times a law was made in Sweden, which in 1440 was confirmed by King Christopher, ordaining, that any person collecting the Bog Myrtle on another man's estate, or from any common before a certain period, should be subjected to a fine. The berries, as well as the bitter leaves, are put into beer, and are also used for making tea.

The Sweet Gale grows in abundance on the mossy bogs of this kingdom, and is especially plentiful in Scotland and Ireland. It is found from Sutherland and the Grampian Mountains to Cornwall, and also from Lapland and other northern countries of Europe, as far south as the north of Italy. It rises, with many stems and branches, to the height of two or three feet, and the branches are covered with a greenish-brown bark, marked with minute

white dots. The leaves are rigid, and somewhat paler beneath, but the foliage has an almost uniform tint of pale yellowish-green, and is also sprinkled with the dots, which are glands containing the resin; and they produce, when bruised, the aromatic odour of the plant. The reddish-brown catkins appear at the end of the summer, and, remaining through the winter, may be seen in the spring before the leaves are unfolded. The berries are very small, and covered, like the leaves, with minute resinous glands. Though the pistilliferous and stamen-bearing flowers are generally produced on different plants, yet they sometimes occur on the same shrub. The Germans call this Bog Myrtle *Gemeine Wachs Strauch.*

2. Birch (*Bétula*).

1. **Common Birch** (*B. álba*).—Leaves sometimes egg-shaped and rounded at the base, sometimes wedge-shaped, at others triangular-acute, doubly serrated; fruit broad, inversely egg-shaped, with a broad margin; perennial. There is, surely, a peculiarly soft and soothing tone of music in the Birch-leaves, when—

> "Rippling through the branches goes the sunshine,
> Among the leaves that palpitate for ever!"

And so thought the American poet Lowell, when he wrote—

> 'Whether my heart with hope or sorrow tremble,
> Thou sympathisest still: wild and unquiet
> I fling me down; the ripple like a river
> Flows valley-ward where calmness is, and by it
> My heart is floated down into the land of quiet."

But we might tell of many poets who have praised, both for its grave and its gentle utterances, the "fragrant Birk," "the Lady of the woods." The tree seems formed rather for elegance than strength, yet it is remarkable for its power of enduring bleak northerly or mountain winds, among which many a tree of sturdier frame would perish. Like the beings to whom Coleridge likens it, it is strong by its very weakness, bending before the storm which would rend the stronger bough. It is a native of the coldest regions, and the dwarf species is the last tree which the traveller finds in his course to the North Pole, becoming smaller as he advances to the Arctic Circle, and being in Lapland so stunted, that a whole tree—leaf, stem, and branches—may be spread out between the leaves of a book. It grows in the cold countries of Europe and Asia, and is the commonest tree in Russia—whole forests of Birch covering extensive districts, and without the intermingling of any other tree. In warmer countries it is found wild chiefly on mountainous or bleak spots, and in England it is therefore not so frequently wild as in some other lands, though familiar to us, because so often ornamenting the park or shrubbery. But before the forests of our country fell beneath the progress of civilization, the Birch was probably more plentiful; and Berkshire and some other places, as well as several family names, are believed to owe their origin to the Birk or Birchen tree. On the Highland mountains it is found at an elevation of 2,500 feet.

There is a drooping variety of the common species, known as the Weep-

ing Birch (var. *pendula*), in which all the branches hang downwards. It is frequent in the Scottish Highlands—

"Where weeps the Birch with silver bark
And long dishevelled hair."

It adorns, too, the rocky streams in North Wales, laving the tips of its boughs in the stream. It is usually a larger tree than the common form, which latter is not generally among the tallest of our woodland trees. The drooping variety has most slender branches, sometimes thirty feet long, and scarcely thicker than a packthread, so that they remind us of the old English proverb, "Birchen twigs break no bones."

In very favourable situations the Common Birch grows sixty or seventy feet high, but a Birch-tree of even fifty feet in height is rare in England. Far away on the landscape we may distinguish the Birch from all other trees by its slender silvery trunk, which is usually straight, and its white cuticle is in younger trees smooth and shining. In its more advanced stages, however, this outer skin is cleft; and many a crevice, extending even into its inner bark, is made by the touch of time, while it is often tinted here and there with pale yellow hues. The young twigs are of a uniform purple-brown. Many poets, like Wordsworth, have alluded to its delicately-tinted scaly stem:—

"But now to form a shade,
For these green alders have together wound
Their foliage; aspens flung their arms around
And Birch-trees risen in silver colonnade."

Beneath the outer bark lies the beautiful smooth Birch-bark, of a pale cedar colour, which in Canada is made into so many ornamental boxes, screens, and other articles, and embroidered with dyed porcupine-quills. Country children, even in England, sometimes make very pretty little baskets and vases of this material, and its surface is so smooth that it receives writing made with a common pen and ink almost as well as does the bark of the celebrated Canadian Birch-tree, of which Lowell says:

"Thou art the go-between of rustic lovers;
Thy white bark has their secrets in its keeping."

The inexpensiveness of writing-paper renders this bark of small importance in this country. The author of these pages has, however, sometimes written little letters on Birch-bark, but has not been able to ascertain that this material is ever so used, even in the most remote districts, by country people. Charlotte Smith, referring to some of our woodland trees, says:

"The slender Birch its paper rind
Seems offering to divided love;
And shuddering ev'n without a wind,
Aspens their paler foliage move,
As if some spirit of the air
Breathed a low sigh in passing there."

This bark is one of the materials on which the ancients wrote, when as yet the printing-press had not stamped for ever the record of thought.

According to Pliny, the celebrated books which Numa Pompilius composed seven hundred years before Christ, and which were buried with him, were written on the bark of the Birch-tree. The inhabitants of northern countries make shoes of this bark, and weave strips into baskets for household purposes; and it is the resinous matter contained in this portion of the tree, chiefly, which renders the Birch so fragrant, though the resin exuding from the buds, young twigs, and leaves probably contributes also to the odour. If a strip of bark be lighted, it burns with a clear blue flame, and gives a light equal to that of two ordinary candles, diffusing at the same time a most delicious perfume. The inhabitants of the Highlands, who call this substance *meillag*, were formerly accustomed to use it instead of candles; and on the Alps torches are frequently made of the resinous Birch-boughs.

The Birch is indeed a blessing to those countries in which trees are scarce; and the forests at the north of Europe, extending as they do through the length and breadth of the land, form a providential supply of necessaries and comforts to the dwellers in those cold regions. Large tracts of Birches, pines, and firs have all their value, and in dreary Iceland the Birch grows to the utmost limits of vegetation, supplying to the people a most valuable store of benefits. Their winter hearth is cheered by its fuel, the twigs are used for ropes and cordage, and the bark serves them for boats, or, cut into square pieces, is in many northern countries used instead of tiles for the houses. The bark is uninjured by exposure to weather, and so durable that it even outlives the wood within. Maupertius, when travelling through Lapland, passed through extensive forests of this tree, and he says that the fallen Birches and firs lying among the moss often rendered the road almost impassable. On examining these trunks he found that time had reduced the wood to dust without occasioning the smallest change in the bark. "We were," he says, "surprised to find that, with the least stroke, we could crush and break them, although of some size." Such a sight would readily suggest to the people of the North the use of this bark on the roofs of houses; and in Sweden the bark is covered with a layer of earth, on which grass and other plants are grown. It is also used in tanning, and the pleasant fragrance of the Russia-leather bindings to books is derived from the oil of the Birch. Large thick pieces of bark easily separate from the wood, and form hollow cylinders, which, after being partly flattened, are worn by the Laplanders on their shoulders to protect them from rain.

Leyden, in his pretty version of the Finland Mother's song, records another use of a portion of this tree in the North:—

> Sweet bird of the meadow, oh! soft be thy rest,
> Thy mother will wake thee at morn from thy nest;
> She has made a soft nest, little Redbreast, for thee,
> Of the leaves of the Birch, and the bark of the tree.
> Then soothe thee, sweet bird of my bosom, once more
> 'Tis Sleep, little infant, that stands at thy door."

The Russians believe that the Birch is never struck by lightning. They are very fond of the tree; and though immense tracts of their land are covered with its wild growth, yet they surround their dwellings with its graceful boughs; and in the neighbourhood of Moscow, where it grows on the estates of the nobles, it is the prevailing tree of the landscape.

The catkins and young buds form a store of food to the birds, so abundant in northern latitudes; and some ornithologists consider this tree to be the great source of attraction to many birds, which feed on the catkins in spring, and the seeds in winter. The grouse prefers the seeds of the Dwarf Birch; but the ptarmigan, as well as the smaller birds, seems to like best those of the common species. The pretty little siskin is very fond of the catkins.

In Siberia and other northern countries, large knobs which grow on the Birch-trees are frequently used for making bowls, being cut very thin, and then highly varnished. They are represented by Kalm as very pretty articles of domestic use, being of a pale yellow colour, marbled in a picturesque manner, and so thin as to be almost transparent. When put into water, they are, he says, so pliable that they may be quite flattened; but when removed and left untouched, they regain their original form. These vessels sell for a high price in Russia.

The Highlanders, as Mr. Loudon observes, make everything of the Birch-tree—houses, beds, chairs, tables, dishes, spoons, carts, ploughs, fences, barrows, and even ropes. They use its branches in distilling their whisky, the spray for smoking hams and herrings, and for thatching houses; and in spots on which heather is scarce, they gather the slight boughs of the Birch and sleep on them, or fill their beds with the leaves. The knobs, which they call "Witches' Knots," they also cut into bowls; and an old Scottish proverb, which says of a very poor man that he is "Bare as a Birk at Yule e'en," seems to allude to the old custom of stripping the bark of the tree to make the Yule or Christmas log. The young shoots are used for brooms, and a very pleasant wine is made from the sap.

The leaves of the Birch were much praised by our old herbalists for medicinal properties; these, however, are very slight. We wonder not that in the olden days, when the houses and churches were decked with boughs, our fathers so commonly used those of the Birch. In looking over the works of our antiquaries, as those of Stowe and Brande, we find continual mention of the Birch in garlands; and Gerarde tells how it was used for "banqueting-rooms for places of pleasure."

A form having more rhomboid leaves, and the side-lobes of the fruiting bracts more erect, is recognised as a sub-species under the name of *B. glutinosa*. The form with smooth resinous leaves is known as the var. *denudata*; and another with downy twigs and leaves is the var. *pubescens*.

The French call our tree *Le Bouleau*; and the Germans, *Die Birke*. The Italians term it *Betula*; the Spaniards, *Abedul*; and the Russians, *Beresa*. It is the *Birk* of the Danes and the *Biork* of the Swedes; while the Anglo-Saxons called it *Bire*, or *Birce*. It is often termed the Birchen-tree, especially in poetic descriptions; and Watcher thinks that the word is from the verb *brechen, splendere*, to be bright, and that it refers to the brilliant whiteness of the outer rind. Pliny comments on this rind, and in the words of his translator says, "It showeth wonderful white."

2. **Dwarf Birch** (*B. nana*).—Leaves roundish, bluntly crenate, smooth, on short stalks; fruit roundish, with a narrow margin; perennial. This little shrub, which is common in several parts of the Highlands of Scotland,

is rare in the Lowlands. It is in Britain, as well as in some parts of Northern Europe, a low shrub, rarely more than two feet high; but in Russia and Siberia, where it is a common plant, it reaches, when growing in wet places, the height of six feet, and when cultivated assumes an erect form, and becomes somewhat taller. Small as is the shrub in Lapland, it is of great importance, serving for fuel, couches, and also for dyeing yellow. Its boughs are burnt to chase away by their smoke the gnats which so trouble the reindeer; and a fungus which grows upon it is used by the Lapland doctors in some painful disorders. The ptarmigan, one of the most important sources of Lapland commerce, is supported by its catkins. The fertile catkins grow at the extremity of its branches.

3. ALDER (*Álnus*).

Common Alder (*A. glutinósa*).—Leaves roundish, blunt, wavy, serrated, glutinous, with a wedge-shaped base; axils of the veins downy beneath; barren catkins long and drooping; fertile ones short, remaining long on the tree; perennial. Most persons love to wander where the stream is winding its way through grass and flowers. The child goes there for the minnows, the naturalist seeks there some of the sprightliest birds and brightest insects, and the botanist lingers there for the richest profusion of flowers. The lover of nature and the poet delight to listen to the gentle songs of winds and waters, and waving willows and Alders, and to mark the truth of the poet's description of the stream:

> "It flows through flowering meads,
> Gladdening the herds which on its margin browse;
> Its quiet bounty feeds
> The Alders that o'ershade it with their boughs.
>
> "Gently it murmurs by
> The village churchyard its low plaintive tone;
> A dirge-like melody,
> For worth and beauty modest as its own.
>
> "More gaily now it sweeps
> By the small school-house, in the sunshine bright:
> And o'er the pebbles leaps,
> Like happy hearts by holiday made light."

As the mind recalls the riverside and its scenery, we remember the dark green Alders, which so often contrast with the brighter or paler foliage of the various kinds of willow. Its masses of somewhat heavy leaves remind one, in form, of the foliage of the hazel, but though darker in tint, yet their glossy surface reflects the light of the sun far differently; and the young shoots which encircle the base of the blackish rugged trunk are of the most tender green. The Alder perpetuates the moisture of the soil, and does not, like the ash, serve to drain it, yet grass grows and is rich and green beneath its shadow. Many an old English name of town or village is derived from this tree. In the North it is commonly called Eller, and the Anglo-Saxons called it *Ellyrtre*, a name which we trace in the *Elletraoe* of the Danes, the *Elzeboome* of the Dutch, and the *Erlenbaume* of the Germans. The town of Ellerburne, in Yorkshire, doubtless derived its name from its growth of Alders, as did Ellerbeck, where Alders fringed the beck or stream. The

Latin *Alnus*, French *Aulne*, and Spanish *Alno*, are thought to be abridged from *Alor amne*, "I am nourished by the stream"; and the Alder and Eller have probably the same origin. The Alderkars of our ancestors were spots where Alders grew; and Mr. Forby says that in Norfolk the word *Car* signifies a wood or grove, in a moist soil, generally of Alders. In the Anglo-Latin Dictionary *Ker* is given for Alder, and "where treys growyn be a water or a fenne." Mr. Albert Way remarks, "Camden, in his 'Remains,' explains *Car* as signifying 'a low watere-place where Alders do grow.'" He adds, that John Crane, of Norton Subcors, Norwich, bequeathed to his wife, in 1484, "All the londes, merys, marysses, alderkars, &c., in Norton." On the Hereford side of the county of Salop the Alder is called the Orl.

The Alder is a common tree by water-sides throughout Europe, and is more truly aquatic than any other extra-tropical tree, flourishing in soils too moist for even the willow and the poplar. It occurs occasionally as a shrub on the mountains, but on its native moist grassy slopes it becomes a goodly tree, sometimes fifty or sixty feet high. The largest Alder in England is one near a rivulet at Haverland, in Norfolk.

We can hardly describe the Alder as a handsome tree. Its rifted trunk is dark, and its foliage too heavy to move much in the wind; so that it offers less variations of light and shadow, as well as of tint, than most trees. Gilpin, however, considers it picturesque, and says: "He that would see the Alder in perfection, must follow the banks of the Mole, in Surrey, through the sweet vales of Dorking and Mickleham, into the groves of Esher. The Mole, indeed, is far from being a beautiful river; it is a silent and sluggish stream; but what variety it has it owes chiefly to the Alders which everywhere fringe its meadows, and in many places form very pleasing scenes." The foliage has this advantage, that long after the willow-boughs are bare, and seem to serve as a harp over which the winds of winter may play, the Alder-bough is scarcely losing a leaf from the green mass. The foliage is glutinous, and if we put a leaf in the mouth, we might fancy we were biting a thin layer of indiarubber. The surface is so clammy that small insects are caught by it. "The said leaves," says an old herbalist, "gathered while the morning dew is upon them, and brought into a chamber troubled with fleas, will gather them thereunto, which being suddenly cast out, will rid the chamber of those troublesome bedfellows." These leaves when in bud are completely wrapped up in two oblong whitish stipules, which, as the leaves burst open, are scattered by the wind around the tree.

Our fathers found many medicinal virtues in the Alder, and the bark is undoubtedly astringent and tonic. It is thought to be as efficacious as the Peruvian-bark, if about twice the quantity be taken; and a decoction used as a gargle in sore-throat is very useful. But the value of the old application of the leaves is somewhat doubtful. The decoction of Alder-leaf was considered "excellent against burnings and inflammations." The leaves were applied to wounds, and were recommended to be placed beneath the "feet of the weary traveller," who was promised a "great refreshing" by the application. The leaves and young shoots are eaten by cows, goats, horses, and sheep, but are not very attractive to these animals. Linnæus says, that when they eat them, their tongues are turned black.

It is for its wood that the Alder is prized in modern times. It is used in turnery and cabinet-making, and is wrought into shoes, clogs, and other articles. Very pretty tables are made of the old knotted trunks of the trees, which are varied like the most beautiful maple-wood, and are of a reddish-brown hue. The new wood is dyed brown for many ornamental purposes; and in peat-bogs, where the fallen Alders have lain for ages, it has become as black as ebony, and many articles believed to be of ebony are, in fact, made from this bog-wood.

But the great superiority of the Alder-wood above that of any other tree, is its durability when under water. This quality was well known to the ancients, and Virgil says, that the first boat was made from it:—

"Then rivers first the hollow'd Alder knew."

Vitruvius records its fitness for piles; and in Pliny's time it was used not only for piles, which he calls "eternal," but also for water-pipes. It is still much employed in the embankments of Holland; and the city of Ravenna, as well as the far-famed bridge, the Rialto of Venice, is built on Alder-piles. It is well fitted for water-pipes, as being easily perforated, but modern inventions have almost superseded its use. It affords one of the best charcoals for gunpowder, and no other wood forms carbon so fitted for galvanic experiments, Alder charcoal having been long used in voltaic batteries. The astringent bark and young shoots furnish the tanner with a good material, and these shoots, as well as the catkins, yield a good green dye. The short, oval, fertile catkins are sometimes used by fishermen instead of corks to buoy their nets above water.

4. Willow (*Sálix*).

Group I. Monandræ.—*Borr.*

Filaments 2, partially or entirely united; capsules sessile; catkins lateral, sessile, very compact, with small bracts at the base, appearing before the leaves; leaves green, not silky or downy beneath; small trees or twiggy shrubs.

1. **Purple Willow** (*S. purpúrea*).—Capsule egg-shaped, downy, sessile; styles very short; stigma egg-shaped; leaves often opposite, broader upwards, tapering to a point, finely serrate; stipules none; branches in one form bending down and purple, in another (the *S. lambertiana* of Smith) erect, with the branches purple, and the leaves oblong, linear-lanceolate; while in a third form, Woolgar's Willow (*S. woolgariana*) the leaves are wedge-shaped, lanceolate, the branches yellowish, and the stigmas notched. This Willow, when growing wild, is but a shrub, with a stem from five to ten feet high, having long slender branches, which in the trailing variety are of a rich purple colour, with a somewhat glaucous tint, and very smooth and glossy. It grows about marshes, and—

"Where the runnel winds its weedy way,
And where the Willows on its margin grow."

The catkins appear in March and April on the yet leafless boughs, and the anthers are at first purple, becoming finally black. This Willow is sometimes

1 PURPLE WILLOW
Salix purpurea

2 ROSE W.
S. helix

3 FINE BASKET-OSIER
S. forbyana

4 GREEN-LEAVED O.
S. rubra

planted for basket-work, as well as for making slight fences; and as the bark is bitter, these fences are not destroyed by hares and rabbits. It is a pretty plant during winter, its graceful purple boughs being ornamental even without leaves, and the young shoots in spring being clothed with a few delicate green leaves and numerous catkins of a purplish-brown tinge.

The classification of the Willows is attended with considerable difficulty, botanists varying much in opinion as to the number of species. Numerous plants that are merely varieties have been described as distinct species. Mr. Borrer has given great attention to the Willows, and Hooker and Arnott, the authors of the "British Flora," followed his arrangement with but few deviations. Our list is given from theirs; but for the very minute scientific characters, as well as for the exact descriptions of many varieties once considered species, the reader is referred to Borrer, De Candolle's *Prodromus*, and Boswell's *English Botany*.

2. **Rose Willow** (*S. hélix*).—Capsule egg-shaped; style nearly as long as the cleft stigmas; filaments united throughout their length; leaves often opposite, lanceolate, broadest upwards, and tapering to a point, finely serrated, without stipules. This species differs from the last so little, that some botanists regard it but as a variety of the Purple Willow. It is characterized chiefly by its much longer style and cleft stigmas. It is a tree of humble growth, with erect branches, covered with yellow or purplish-grey glossy bark. Its catkins are longer than those of the last species, and the fertile ones are more than twice as thick. It is taller than that shrub, and has altogether a lighter hue.

The plant owes its name of Rose Willow to certain rose-like expansions at the end of the branches, which, though found occasionally on other Willows, are more frequent on this. These tufts are caused by the puncture of a *Cynips*, which deposits its eggs in the tops of the twigs, in consequence of which they shoot out into leaves differing from the ordinary form of the foliage, and not unlike a rose in their growth. They are conspicuous on the boughs even in winter, remaining long after the wind has swept away all other foliage, and some of the tufts being two or three inches across. The leaves and twigs of this species have but little bitterness; and Sir J. E. Smith says that the roots give more strength and solidity to the banks of rivers and ditches than do those of the Purple Willow; while Dr. George Johnston was of opinion that it endured storms better than any other species. Gerarde says of the Rose Willow, that it "makes a gallant showe, and yields a most coole aire in the heate of summer, being set up in a house for the decking of the same." Its twigs are used by the basket-maker for coarse work. Its name of *helix* is thought to be derived from the peculiar twist of its leaves, reminding one of the snail's shell.

3. **Fine Basket Osier** (*S. forbyána*).—Leaves alternate, lanceolate, oblong, serrated, smooth; style nearly as long as the divided stigmas; filaments united throughout length; stipules linear-lanceolate. This plant, which is called Forby's Willow, after the Rev. Joseph Forby, grows wild in Cambridgeshire, and is not unfrequent in meadows and osier-grounds about Fincham, in Norfolk. It is nearly allied to *S. helix*, but differs from it in its foliage. The stem is erect and bushy, with upright slender twigs, very

smooth and glossy, and of yellowish-green colour. The fertile catkins much resemble those of the last species.

This is one of the Willows greatly used by the basket-makers, its tough flexible twigs serving well for the finer kinds of wicker-work. As Grahame says—

> "To name the uses of the Willow tribes
> Were endless task. The basket's various forms
> For various purposes of household thrift,
> The wicker-chair, of size and shape antique,
> The rocking-couch of sleeping infancy—
> These, with unnumber'd other forms and kinds,
> Give bread to hands unfit for other work."

Several species of Willow are grown for these uses in Osier-holts, though of late years large numbers of Osiers have been imported from Holland, in which country the "Willows by the watercourses" are very numerous. The Common Osier, *S. viminalis*, and the Three-stamened Osier, *S. triandra*, are among those most commonly planted; and large patches of low land, too moist for the growth of other trees, are in Holland and Spain covered with Osiers. In this kingdom, in the flat parts of Lancashire, as well as on the great level of the Fens, Osier-grounds are not infrequent, and are sometimes sixty or seventy acres in extent; spots being chosen for Osier-holts whose surface is not overflowed with water during summer for more than a few days, though an inundation lasting through three of the winter months is unimportant. Several different kinds of Osier may be grown on the same ground, and the land is cultivated at small expense, but it is necessary that it should be kept free from weeds. The Osiers are suffered to grow for two years, after which their flexible boughs are cut annually, and the plant either sold "green," as it is technically called, by the acre, or the shoots are cut and tied up in bundles—the larger growers generally disposing of them in the latter mode. They are prepared for the basket-maker's use by setting them up immediately after cutting, with their thicker ends a few inches deep in water, and after a time stripping off the bark; and in Essex, as well as some other counties, groups of country people may be seen sitting on the village green engaged in preparing the Osier-boughs.

4. **Green-leaved Osier** (*S. rúbra*).—Filaments united at the base only; capsule oblong egg-shaped; style elongated; stigmas undivided; leaves alternate, linear-lanceolate (broader in the fertile plant), tapering to a point, and serrated; stipules minute. This plant of the wet meadow, or Osier-holt, is rare in England, though not unfrequent in the hedges and Osier-grounds of Scotland. It occurs about Maidenhead and near Salisbury, in several parts of Cambridgeshire, and a few other localities. The Green-leaved Osier is a small tree, flowering in April and May, with long erect branches, usually of a dull brown, but sometimes of a greyish or purplish tint. Its leaves are long, narrow, and tapering, of full green hue, and its anthers are yellow. It has no claims to the character of redness implied in its specific name, and this was given originally to a species with which it was confounded. When planted, it sometimes grows to the height of thirty feet, and its shoots, which are from five to eight feet long, are useful for basket-work, crates, and other purposes.

Group II. TRIANDRÆ.—*Borr.*

Stamens 3; capsules stalked; catkins loose and leafy; trees or large shrubs with glossy serrated leaves and stipules shorter than the leaf-stalks, most of the plants constituting excellent osiers.

5. **Blunt-stipuled Triandrous Willow** (*S. triándra*). — Leaves serrated; stipules half heart-shaped, blunt; scales of the catkins smooth, or slightly hairy; stigma nearly sessile. Several forms of this Willow occur, differing chiefly in the shape and tint of the leaves, which are always perfectly smooth, but which in one variety are oblong-lanceolate, in another linear-lanceolate, in some more approaching to egg-shaped. These have been described as different species, and are known as the Long-leaved Triandrous Willow, the French Willow, Short-leaved Triandrous Willow, and the Almond-leaved Willow. This species furnishes in all its forms tough, flexible boughs, which afford excellent material for wicker-work, hoops, and crates. The catkins appear from March to June, and the tree sometimes attains a height of thirty feet. It may be found in wet woods and by watersides; and many a patient angler has sheltered himself beneath its boughs, or gone, as Clare describes the peasant as doing—

> "To seek the brook that down the meadow glides
> Where the grey Willow shadows by its sides;
> Where flag and reed in wild disorder spread,
> And bending bulrush bows its taper head;
> And just above the surface of the floods,
> Where water-lilies mount their snowy buds,
> On whose broad swimming leaves of glossy green
> The shining dragon-fly is often seen;
> Where hanging thorns with roots wash'd bare appear,
> That shield the moor-hen's nest from year to year;
> While crowding osiers mingling wild among,
> Prove snug asylums to her brood when young,
> Who, when surprised by foes approaching near,
> Plunge 'neath the weeping boughs and disappear."

It is one of the most valuable Osiers, and is often cultivated for basket-work, and the almond-leaved variety bears its flowers not only in the spring, but again in August.

6. **Sharp-stipuled Triandrous Willow** (*S. undulàta*). — Leaves lanceolate, tapering to a fine point, sharply and finely serrated, often wavy; stipules half heart-shaped, acute; scales of the catkins very downy; capsule smooth or silky; style as long as the stigmas. This species, which is the *S. lanceolata* of Smith, is also sometimes called the Wavy-leaved Willow. It grows near Lewes, in Sussex, but is not a native plant. It is a small bushy tree, rarely more than ten feet high, with brown, smooth, round branches, and beautiful silky catkins about an inch long, which appear in March and April, the young leaves being almost as silky as the catkins. It is cultivated for the coarser kind of basket-work, such as crates and hampers.

Group III. PENTANDRÆ.—*Borr.*

Stamens usually more than 3 in a flower, mostly 5, very long; capsules stalked; catkins lax, appearing with the leaves; leaves large, serrated, having glands in their serratures, from which a resin exudes.

7. **Sweet Bay-leaved Willow** (*S. pentándra*).—Leaves egg-shaped, pointed, glossy, on footstalks which are glandular at the summit. This is one of the most ornamental of our native Willows, scarcely indeed reminding us of the Willow tribe, its large plentiful deep-green leaves resembling rather those of our cultivated evergreens. When growing wild it is but a bushy shrub, rarely more than eight feet high; but when cultivated, it becomes a tree reaching to the height of twenty feet. Some such Willows may be seen reflected in the waters of pleasure-grounds, though less frequently than from its beauty one might expect. It often forms compact, hardy-looking bushes by the stream-sides of the north of England, and in Ireland; and the Rev. C. A. Johns remarks of it, in his "Forest Trees of Britain," that he has seen bushy hedges of this Willow stretching across the extensive bogs which abound in the neighbourhood of the Giant's Causeway. Its leaves are fragrant, and, when bruised, as sweet as those of the bay-tree. It flowers in May and June, and is, consequently, the latest of our native species to flower. Its beautiful catkins are also sweet-scented, and by the middle of summer are very ornamental, with the bursting seed-vessels, which are sending forth their thousands of seeds to be borne through the air by their snow-white wings. In the earlier months the silky down of several Willows had served as lining for the nests of many a singing-bird, and now the small seeds are yielding them a large store of food. This down may be collected for filling cushions and pillows, and is used in making an inferior paper; while, when mixed with a third part of cotton, it has been advantageously adopted for candle-wicks and other purposes. The Germans mingle it with other materials in making a kind of wadding for ladies' dresses. The wood of this Willow is too brittle to be of much importance, but the tree produces long flexible twigs, fitted for basket-work.

8. **Cuspidate Willow** (*S. cuspidáta*).—Leaves oblong-lanceolate, pointed, smooth, green and shining above, rather pale beneath, but not of sea-green tint, serrated; stipules half heart-shaped, oblique; stamens 3—4; stigmas 2-cleft. This Willow is scarcely different from the last, the form of the stipules and the longer stalk of the ovary forming the chief distinctive characters. It is a handsome tree, with large, broad, shining leaves, and brownish smooth branches, somewhat warty. It has long slender catkins in March and April. It occurs near Shrewsbury, but is a doubtful native, having probably been introduced from Sweden or Germany. It was by Willdenow termed *S. meyeriana*.

Group IV. FRAGILES AND ALBÆ.—*Borr.*

Stamens 2 to a flower; flowers very loosely disposed in the catkins, which appear with the leaves on short lateral leafy shoots; leaves lanceolate, serrated, smooth, and stipuled.

9. **Crack Willow** (*S. frágilis*).—Leaves smooth or downy beneath, when young; stipules half heart-shaped; capsules more or less stalked; style conspicuous. Some remarkable varieties occur in this species. The leaves are either egg-shaped, lanceolate, or they are lanceolate, tapering at both ends, as in the Bedford Willow, in which they are also downy during their early stage; or they are lanceolate and quite smooth, as in the White

1. BLUNT STIPULED TRIANDROUS WILLOW
Salix triandra

2. SHARP S. T. W
S. undulata

3. SWEET BAY LEAVED WILLOW
S. pentandra

4. CRACK W
S. fragilis

Pl. 202.

Welsh or Varnished Willow, a variety readily distinguished by its polished bark. The Crack Willow is a not infrequent tree, and in spring-time it is truly ornamental to marshy places or moist woods, as its beautiful grey catkins hang in tufts from among the leaves like silver pendants. It is a large tree, sometimes even eighty feet high, with a bushy head, and branches arranged obliquely, so that they sometimes cross each other; a form very different from that of most of the Willows, which have their branches usually issuing in almost straight lines from the trunk. The brittle nature of the branches originated the name of Crack Willow; and this brittleness is so great at the base that they may, during spring, be severed from the trunk by a slight blow. It is commonly in country places called Withy, though this is a very old name for any kind of Willow. The Anglo-Saxon names of the Willow were *Welie*, *Welige*, and *Wilhig;* and Kilian considers that *Willighe* was given because the tree grows promptly and willingly, that is, freely, as the Latin *Salix e saliendo* is from the shoots it makes. The roots of the Crack Willow are used in Sweden to colour the Paschal eggs usually presented among friends and neighbours at Easter.

The variety of *S. frágilis* termed the Varnished Willow is an upright tree, with black buds in spring, the branches of the last year being clay-coloured, smooth, and glossy like porcelain, while the shoots of the present year are of crimson colour, the hue often extending to the midrib of the leaves. It is much cultivated for basket-work. The variety termed the Russell or Bedford Willow (*S. russelliana*) has very smooth, glossy leaves, tapering at both ends, and long cylindrical yellow catkins, standing on short leafy branchlets. Like the Crack Willow, it attains a great height; but a marked difference in this form exists in the insertion of the long slender branches, which are straight and not angular in their arrangement; and Mr. Forbes remarks that the two forms, when stripped of their leaves, may readily be distinguished from each other by this circumstance: nor are the branches of the Bedford Willow always brittle. Nearly allied as the two forms are in their general characters, yet they differ in their economical value; and the Bedford Willow, besides being the handsomer variety, furnishes better wood. Its wood, indeed, is more valuable than that of any other of the Willow tribe. The bark contains more tannin than even that of the oak-tree, and no other Willow furnishes so large a proportion of the principle called *salicine*, which is considered scarcely inferior in its medicinal properties to quinine, although the bark of most Willows is astringent and tonic. The tree thrives best near water, yet water is not necessary to its growth, and it is planted with success upon some upland soils. It is named after the Duke of Bedford, who, in his "Salictum Woburnense," first attracted attention to it. Dr. Samuel Johnson has made one Willow of this kind famous, by the delight which he took in reposing beneath the full shadow given by its wide boughs and ample foliage. It stood by the public footpath in the fields near Lichfield, and was said to have been planted by the father of the great lexicographer; while, on the other hand, it has been affirmed that he had set it with his own hand. However that may be, it was a favourite tree with the Doctor, for he used to remark that it had been the delight of his early and waning life; and had he lived to witness its destruc-

tion, he would have shared in some of the feelings expressed by Pollok for two older trees:

"Tall trees they were
And old, and had been old a century
Before my day. None living could say aught
About their youth; but they were goodly trees:
And oft I wonder'd, as I sate and thought
Beneath their summer shade, or in the night
Of winter heard the spirits of the wind
Growling among their boughs—how they had grown
To such a height in such tempestuous place.
And when a hapless branch, torn by the blast,
Fell down, I mourn'd as if a friend had fallen."

In the spring of 1810, Dr. Withering found Dr. Johnson's tree having, at six feet from the ground, a girth of twenty-one feet, and extending twenty feet in height before dividing into enormous branches. It then stood in unimpaired beauty, a noble tree; but in the autumn of that very year a tempest rent away many of the branches; and five years afterwards nearly half the tree fell, leaving only the large trunk and a few side boughs. A storm in April, 1829, finally levelled this handsome and interesting Willow to the ground; but a young shoot, which had been taken from the tree in the previous season, was planted on the old site, and became the "Johnson's Willow" of later years.

10. **Common White Willow** (*S. álba*).—Leaves elliptical-lanceolate, with glandular serratures, pointed; when young, silky beneath, often so above; ovaries nearly sessile, smooth; stigmas nearly sessile, short; scales short, downy at the margin. In one variety of this Willow the young leaves are silky on both sides; and in another, termed the Blue Willow, the under side of the leaf is silky at first, but finally becomes quite smooth, and of sea-green hue. This is the commonest of all our Willows, and one well known to country dwellers or country ramblers, growing in moist woods, and turning up, as the wind blows, its "silver lining to the light." It looks quite hoary and venerable when in age; and though a handsome tree, yet it needs the admixture on the landscape of some warmer-tinted foliage, or the scene is cold and grey. When growing in numbers it might remind us of what Robert Hall said of the Willows about Cambridge, that they "looked as if Nature were hanging out signals of distress"; and as the tree is often pollarded, the old pollard here and there has a very cheerless and unpicturesque appearance. In olden times many kinds of trees were pollarded, as their wood was needed for fuel instead of coal; and some of the largest oaks in the kingdom appear to have been so cut in order that they might serve as living stores of fuel to the inhabitants of the neighbouring mansion. In earlier days such trees were called Pollingers and Dotterels. For many years past they have been more scarce on the landscape, and the Willow-trees alone are now made into pollards, that their boughs may furnish our baskets. The White Willow has been largely planted for this use, both in this and other countries; and Mr. Loudon says that some hundreds of miles of the road from Moscow to the Austrian frontiers, where it crosses the interminable Steppes, are marked by pollards, which are planted at regular distances on

1 COMMON WHITE WILLOW.
Salix alba.

2 YELLOW W. OR GOLDEN OSIER.
S. vitellina.

3 DARK LONG LEAVED W.
S. petiolaris.

4 ROSEMARY LEAVED W.
S. rosmarinifolia.

both sides of the way. Many a wild spot in our own land might remind us of Pringle's description:

> "And foxgloves looked out from the osiers dank,
> And the wild thyme and violet breathed from the bank,
> And green fairy nooks 'mid the landscape were seen,
> Half hid by the grey rocks that over them lean,
> Where the light birch above its loose tresses was waving,
> And the Willow below in the blue stream was laving
> Its silvery garlands of soft downy buds."

This species is sometimes called the Huntingdon Willow. It grows with great rapidity, and on some of our river-sides may be found trees measuring sixty, seventy, or even eighty feet in height. It is one of the most valuable of all the Willow tribe, and when deprived of its top and made into a pollard, it furnishes wood for poles, fences, crates, and fuel, and is useful for naval architecture, roofs of houses, weather-boards, and other purposes.

Its twigs form a very important article to the basket-maker, and of the wood, cut into thin strips, are made those willow hats and bonnets known at different periods as fashionable summer attire. The bark of the tree is thick and very liable to crack. It is as valuable to the tanner as the oak-bark; and as a medicinal tonic, it is inferior to none of the species, save the *S. russelliana*. Our fathers knew its worth in the cure of agues; and it was, in very early days, prescribed for several disorders. In the "Breviarie of Health," published in 1598, we find the "oyle" of the Willow used as a remedy; and it was probably procured by preparing the Willow-bark with oil. Thus the author says: "Also for the crampe take of the oyle of lillies and Castory, if it doe come of a cold cause: if it doe come of a hot cause, anoynte the sinews with the oyle of water-lillies, and Willows, and roses. If it doe come of any other cause, take of the oyle of Euforbium and Castory, and of Piretory, and confect a compound altogether, and anoynte the place."

The bark of the White Willow will, when old, burn freely, and the wood is used for fuel, and is said to be best suited for the purpose while yet green. The charcoal formed from this and several other Willows affords an excellent material both for crayons and gunpowder. Before the introduction of coke into our ironworks, wood was used in such large quantities for charcoal, that Evelyn, in his "Sylva," expressed his apprehension lest its use should lead to the entire destruction of our forests. The Forest of Dean has, indeed, been almost entirely destroyed by this use of wood in charcoal-burning. Professor Burnett states that, "Even in 1788, twenty-six out of the eighty-six iron furnaces were heated by wood-charcoal; but, in 1826, the three hundred and five, to which they had at that time increased, were all fed by pitcoal coke." In France a rich crimson colour is obtained from the bark of the White Willow.

11. **Yellow Willow or Golden Osier** (*S. vitellina*).—Leaves lanceolate, with glandular serratures, tapering to a point, silky beneath, often so above; germens sessile, smooth; style short; stigmas two-parted; scales lanceolate, pointed. This Willow is common in hedges in many parts of the kingdom. In early spring, in leafless woods, where "The Willow trails its delicate amber," the flexible boughs contrast well with the red cornel twigs and the green

boughs of ivy or holly, and are so conspicuous that few would pass them unobserved. They retain this golden yellow tint throughout the year, giving to this tree a marked peculiarity. The leaves, too, are sometimes of golden hue, and the plant is, from its colour, known locally as the Yolk-of-Egg-coloured Willow. It is often cultivated for the basket-maker in osier-grounds, and also as an ornamental tree in gardens. It is in the hedges usually but a shrub, but grows under culture to a tree sometimes thirty feet high. Its catkins are long and tapering, and appear in May.

Group V. GRISEÆ.—*Borr.*

Stamens 2, distinct; capsules silky, on long stalks; catkins short, lax, on lateral stalks, with sometimes a few bracts at their base, appearing before the leaves; leaves lanceolate, serrated, with small stipules.

12. **Dark Long-leaved Willow** (*S. petiolaris*).—Leaves, when young, with long silky hairs; capsules egg-shaped-lanceolate; stigmas nearly sessile; scales shaggy, with black hairs. This is a bushy tree, found in the marshes of Angusshire, and in a marsh near Glasgow, and it has been introduced into plantations. It is a common tree of North America, but not indigenous to Britain. It is very unlike most Willows, having brown, smooth, purplish branches, and dark, dull, greyish-green leaves. Its catkins, which appear in April, are short and blunt. The plant seems to abound in tannin, and the leaves have, when gathered, a pleasant almond-like scent.

Group VI. ROSMARINIFOLIÆ, FUSCÆ, AND AMBIGUÆ.—*Borr.*

Stamens 2; capsules silky, stalked; catkins sessile, short, and rather compact, with bracts at the base; leaves small or narrow, or with satiny down. Small or trailing shrubs.

13. **Rosemary-leaved Willow** (*S. rosmarinifolia*).—Leaves linear-lanceolate, pointed, especially silky while young, entire, or with few glandular teeth; catkins oblong, more lax when older; stigmas entire or cleft; scales short, covered with shaggy down. This slender shrub, which is two or three feet high, bears its short silky drooping catkins in April. The branches are upright and round, and the young shoots very silky. The leaves are erect and narrower than those of almost any other Willow, and are sometimes two inches long. The down which, while they are young, covers the upper surface, finally disappears, and the veining is clearly seen, but the foliage always retains the silkiness on its glaucous under side. It is a doubtful native, but is said to have been found by Sherard growing on Scottish bogs at the beginning of last century.

14. **Little Tree Willow** (*S. angustifolia*).—Leaves linear-lanceolate, nearly smooth, with minute glandular serratures, the young ones silky, glaucous beneath; catkins egg-shaped, erect; style about as long as the broad erect entire stigmas; scales very downy at first. This is a little erect slender shrub, about a foot high, with the leaves narrowing at both ends, and, when young, quite grey with silky down. It is found in the Highlands of Scotland, on the Clova Mountains, and also near Dumfries. It has been thought to be the *S. arbuscula* of Linnæus; but the authors of the "British

1. LITTLE TREE WILLOW.
Salix angustifolia.

2. DON'S W.
S. dorniana.

3. DWARF SILKY W.
S. fusca.

4. AMBIGUOUS W.
S. ambigua.

Flora" remark, that it is not the *arbuscula* of Continental botanists. It is nearly allied to the last species, differing chiefly in the more shaggy scales and entire stigmas. It has short lax catkins in April.

15. **Don's Willow, or Rusty-branched Willow** (*S. doniána*).—Branches at first procumbent, afterwards erect; leaves inversely egg-shaped-lanceolate, serrated; stipules linear; catkins erect, cylindrical, dense; stigmas short; anthers yellow. This shrub, which is about six feet high, much resembles *S. purpurea*, differing from it chiefly in its stalked seeds, and in the silkiness of the under surface of its leaves. Its stem sends out leafy branches, which, when very young, are slightly downy, becoming afterwards of a rusty brown colour. The leaves are an inch and a half long, flat, and nearly erect, much veined, green on the upper surface, but of a dull livid colour, and slightly downy or silky beneath, with a prominent reddish midrib. The catkins are on short lateral stalks, and appear in May. Its record as a British plant rests on the authority of George Don, who reported it from Forfarshire.

16. **Dwarf Silky Willow, or Brown Willow** (*S. fúsca*).—Leaves elliptical or elliptic-lanceolate, broadest about the middle, acute, entire, or with minute glandular serratures; somewhat downy, glaucous, mostly very silky beneath; ovaries upon a long stalk; stigmas 2-cleft. A large number of plants formerly considered distinct have, by the authors of the "British Flora" and Mr. Borrer, been regarded as varieties of this species. They differ in the erect or trailing nature of the stem and branches, and in the form and downiness of the leaves, and were described as *S. répens*, *S. prostráta*, *S. foétida*, *S. ascéndens*, *S. parvifólia*, *S. incubácea*, and *S. argéntea*. The Dwarf Silky Willow is usually a beautiful little shrub, with rather long straight branches, but varying very much according to situation. It is in one of its forms, the *S. argentea*, abundant on some commons, trailing its leafy branches, which are grey with silkiness, or in some cases holding itself up by means of neighbouring furze or other bushes: its leaf is generally twisted at the point, and beautifully silvery and shining. The varieties are all plants of heaths and moors, or sandy situations.

17. **Ambiguous Willow** (*S. ambígua*).—Leaves oval, inversely egg-shaped or lanceolate, downy, slightly toothed, with the point turning backwards; somewhat rugged above, glaucous, with prominent veins beneath; catkins erect; fruit stalked, densely silky; style very short; stigmas cloven. In one form the leaves are oval, or inversely egg-shaped, and moderately hairy; in a second, they are inversely egg-shaped, and very silky on both sides; and in another, the *S. spathulata* of Willdenow, they are inversely egg-shaped and lanceolate, or oblong and somewhat hairy or silky. The Ambiguous Willow is a small straggling shrub, about three or four feet high, its branches sometimes quite prostrate, at others rising a foot or two above the surface of the ground. Its young twigs are downy, its leaves thin, and the veins sunken above and prominent beneath, rendering the green part somewhat wrinkled. It varies much in the silkiness and downiness of its leaves, and has stalked upright cylindrical catkins. It is indigenous on gravelly heaths in Sussex, Essex, and Suffolk, and has been seen also in Perthshire, Aberdeen, Inverness, Angus, Caithness, Orkney, and the Hebrides.

Group VII. RETICULATÆ.—*Borr.*

Stamens 2; capsules crowded, sessile, downy; stigmas almost sessile; catkins cylindrical, terminal, stalked, appearing with the full-grown leaves; leaves roundish, with netted veins beneath. Dwarf alpine shrubs, with the stem creeping below the surface of the ground.

18. **Reticulated, Netted or Wrinkled-leaved Willow** (*S. reticulata*).—Leaves alternate, roundish, nearly smooth. This is a very remarkable Willow, and quite unlike the other British species. It has a short, stout, woody, trailing stem, very much branched, and large handsome leaves of deep glossy green above, and sea-green tint or white beneath, very curiously netted, with an abundance of prominent veins, which are on the under surface sometimes of purple colour. The stems have also a reddish or purplish tinge, and the buds and catkins are often of deep purple. The catkins appear in June and July. It is an alpine Willow, occurring on elevated mountains of the middle and north of Scotland, at altitudes between 2,000 and 3,200 feet. It grows on the Pyrenees and other mountains, above the limits of perpetual snow, and is found also in Arctic regions up to the extreme limits of vegetation. Sir J. E. Smith quotes the remark of Lightfoot, that the soil of many of the Highland mountains on which it grows is micaceous.

Group VIII. GLAUCÆ.—*Borr.*

Stamens 2; capsule sessile, very downy or silky; catkins compact, appearing with the leaves. Small upright shrubs, mostly remarkable for their leaves, which are soft, hairy, silky, and generally white and cottony beneath.

19. **Downy Mountain Willow or Sand Willow** (*S. arenária*).—Leaves between roundish-egg-shaped and oblong-lanceolate, cottony and sometimes silky beneath; catkins usually naked, rarely on leafy shoots. Some varieties occur in this species, differing in the form of the leaves, the degree of cottony or silky down, and in the length of the style in the flower. They have been termed *S. stuartiána*, *S. limósa*, and *S. glaúca*. The Downy Mountain Willow is a somewhat large shrub, found in the Highland mountains, especially those of Clova and Breadalbane. The leaves are small, the upper surface of dark green, and in one form having sunken veins, while in others the surface is even. The upper part of the leaf, though more or less downy, is less densely so than the under part; and in the variety formerly described as *S. glaúca*, the upper side is of beautiful glaucous green, and under part white as snow, with a reddish midrib; in this form the leaves are about two inches long. The Stuart's Willow, or Small-leaved Shaggy Willow, has leaves shaggy above and densely silky or cottony beneath. The catkins appear in June and July.

Group IX. VIMINALES.—*Borr.*

Stamens 2; capsules either sessile or on short stalks; catkins nearly sessile, with leaf-like bracts at the base, appearing at the same time as the leaves. Trees with pliant branches.

20. **Common Osier** (*S. viminális*).—Leaves linear or linear-lanceolate,

1 RETICULATED WILLOW.
Salix reticulata.

2 DOWNY MOUNTAIN W.
S. arenaria.

3 COMMON OSIER.
S. viminalis.

4 AURICLED O.
S. stipularis.

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obscurely crenate, white and silky beneath; stipules nearly lanceolate, very small; ovaries almost sessile; stigmas long and slender. This is one of the most common of our native Osiers, the word "osier" being applied to those Willows used in basket-work. It is largely cultivated in the osier-holts or willow-garths, as such grounds are called in Yorkshire, and it grows wild in many wet meadows—

"Where the Willow keeps
A patient watch over the stream that creeps
Wanderingly by it."

Although the erect form of the branches of this tree renders it unattractive, yet the long narrow leaves are pretty, with their glossy, satiny under surfaces. They grow almost erect, and are about six inches long, slightly waved or curled under at the edges, and of full green above. The numerous showy catkins adorn the boughs in April and May. The slight and twiggy branches of this Osier are very valuable in basket-work, and the tree is often called Twiggy Willow. Its twigs have many rustic uses; for, as the old Italian proverb says, "Willows are weak, but they bind other wood," and many a schoolboy sits patiently by the river, when

"The captive fish still fills the anxious eyes,
And willow-wicks lie ready for the prize;"

or could say with Clare—

"And oft with anxious feeling would I climb
The waving willow-row a stick to trim,
To reach the water-lily's tempting flower,
That on the surface of the pool did swim."

All sorts of baskets, from the rough hamper to the delicate work-basket of the lady's boudoir, are made of the boughs of this Osier. If we were of Fuller's opinion we might look with satisfaction on the Osiers, because, as he quaintly says, "They in some sort saved the life of St. Paul, when he was let down from the walls of Damascus by a basket." The boughs are also often used for hoops.

21. **The Stipuled or Auricled-leaved Osier or Willow** (*S. stipulâris*).—Leaves lanceolate, very slightly crenate, white and downy beneath; stipules large, half heart-shaped, acute, often with a tooth or lobe at the base; ovaries nearly sessile; stigmas long and slender. This, too, is a common tree in osier-holts, and grows in the hedges about Bury St. Edmunds, flowering in March. It has long, upright, soft, and downy twigs, of a pale reddish-brown colour. Though nearly allied to the last, and differing in appearance chiefly in its larger, coarser leaves, which are also less white beneath, and in the stipules, which are very conspicuous on the under shoots, yet it is, for economic purposes, very inferior to the Common Osier, on account of the brittleness of its twigs. The leaves are very abundant, about six inches long, with short fine down beneath, and a reddish or pale midrib.

22. **Silky-leaved Osier Smith's or Willow** (*S. smithiâna*).—Leaves lanceolate, slightly crenate, white and glossy beneath; stipules very small, narrow, acute; ovaries distinctly stalked; stigmas long and slender. This

is common in wet woods, meadows, and osier-grounds in some parts of the kingdom. Its branches are erect, round, slender, smooth, and, when young, slightly downy, and of reddish-green colour. The leaves are somewhat waved at the margin, three or four inches long, the upper surface green and soft, from a scarcely perceptible silky down upon them, while on the under surface the silky down renders them white and glossy as satin: the midrib and veins are red. The catkins are small and numerous, appearing on the leafless branches in March and April. It is the *S. mollissima* of some writers.

23. **Long-leaved Sallow** (*S. acuminata*).—Leaves lanceolate-oblong, pointed, wavy, finely-toothed, glaucous, and downy beneath; stipules half egg-shaped; ovary distinctly stalked. This Willow grows in hedges, and in

> "Many a woodland dim,
> Mid buried paths, where sleepy twilight dreams
> The summer time away,"

and where the stream is trickling to the tune of the rustling leaves. It is, perhaps, however, not truly wild. It is usually a low tree, rarely exceeding twenty feet in height; and the authors of the "British Flora" remark, that when in flower it can be distinguished from the two last species only by its shorter stigmas. Its cylindrical catkins appear in March and April. The branches are upright, soft, and downy; the leaves are about an inch broad, and three or four inches long, either flat or wrinkled, the upper side green, free from down, the under pale, or of sea-green hue, soft and downy, with a strongly-marked somewhat red midrib and veins, the stout reddish foot-stalks being about half an inch in length.

24. **Ferruginous Sallow** (*S. ferruginea*).—Leaves lanceolate, with wavy roundish notches, and small teeth, hairy on both sides, paler beneath; stipules small, half egg-shaped; ovaries distinctly stalked. This species was first observed near Carlisle in 1809, and has since been found in Fifeshire and other parts of Scotland, as well as on the banks of the Thames. Mr. Forbes, in the "Salictum Woburnense," thus describes it: "A bushy shrub, or low tree; flowering in April, and growing in the Willow-garden at Woburn Abbey to the height of twelve or fourteen feet, with shortish, green, fuscous branches, round, downy, and somewhat of a rusty hue while young, especially towards autumn, but of a more pale yellow in an earlier state. Leaves from two and a half inches to three inches long, lanceolate, tapering towards the base, with rather long oblique points; flat, downy, and dark green above; densely silky, reticulated, and greyish beneath; lower leaves entire, scarcely an inch long, upper ones finely serrated towards the upper part, or rather furnished with minute distant glandular teeth, entire towards the base; the rusty hue is also visible on the lower leaves." The catkins of this species are from an inch to an inch and a half long, and appear in March and April.

Group X. CINERÆ.—*Borr.*

Stamens 2; capsules stalked, covered with silky wool; catkins thick, sessile, appearing before the leaves; leaves stipuled, very veiny beneath, more or less wrinkled. Trees or shrubs.

1. SILKY LEAVED OSIER.
Salix smithiana
2. LONG LEAVED SALLOW.
S. acuminata
3. FERRUGINOUS S.
S. ferruginea
4. COMMON S.
S. cinerea.

25. **Soft Shaggy-flowered Willow** (*S. holosericea*).—Leaves lanceolate, taper-pointed, serrate, smooth above, pale, downy, and strongly veined beneath; catkins cylindrical; scales black, very shaggy. This Willow grows wild about Lewes, in Sussex, flowering in April and May. Its sessile and pale-coloured stigmas, and its leaves, green and wrinkled above and strongly veined beneath, distinguish it from *S. acuminata*, to which it is nearly allied, both being regarded as varieties of *S. viminalis*.

26. **Great Round-leaved Sallow or Goat Willow** (*S. capréa*).—Stem erect or drooping; leaves roundish, egg-shaped, pointed, at first entire, downy above, woolly beneath, autumnal ones serrated, waved, nearly smooth above, downy beneath; stipules somewhat kidney-shaped, toothed; style very short or none. The Willow sometimes called *S. sphacelata*, from the discoloured points of its leaves, is a sub-Alpine form of this; and *S. pendula*, the Kilmarnock Willow, is a variety with broad glossy leaves and drooping branches. The Goat Willow is truly beautiful in springtime, when, long before a leaf unfolds, thousands of its catkins, like golden balls, are gleaming upon the naked boughs. How the early bees cluster about them, won by their fragrance to neglect the opening bluebells and primroses; and how merrily the chiff-chaff, scarcely larger or less bright than themselves, utters his cry of welcome as he flits about them! Bishop Mant says of them:—

> "But cautious of their germs, protrude
> The brethren of the copse and wood;
> For flower or leaf conspicuous most
> The watery Willows' spray, embost
> With oval knobs of silky down,
> Which soon in form of papal crown
> Shall decorate the rustic stem,
> With many a golden diadem."

Children and country people call the boughs, when covered with their catkins, "palms," and many a country child goes forth to gather them, as we have often done, during the week preceding Palm Sunday, with some vague fancy that these Willow-boughs were strewed by the joyful children who shouted the loud hosannas to the Saviour when He entered Jerusalem. This palm-gathering is a remnant of an old Catholic superstition, a relic of times when the pilgrim bore from the Holy Land a palm-branch, to prove that he had won rightly the name of Palmer, and had wandered over the very spots once trodden by our Lord and His disciples. In later years Willow-branches were blessed by the priests; but why, in this country, the Willow—and this particular species—should have been chosen to represent the palm-branch, is not very obvious, though it is certainly not from any resemblance between the two trees. The chief reason, perhaps, was that the two plants were associated together in the direction given to the Israelites, when desired to make booths for that out-of-door rejoicing, so suited to a bright climate, and to the joyous spirits which such a climate induces. When they celebrated the Feast of Tabernacles, they were to gather "the boughs of goodly trees, branches of palms, and the boughs of thick trees and Willows of the brook, and to rejoice before the Lord their God seven days."

The Goat Willow was so called because goats are said to be fond of its

catkins. It is a somewhat small tree, with spreading branches, of purplish-brown colour, which when young are covered with soft down. The leaves are two or three inches long, and are among the broadest of any of the genus. They are, on the upper surface, of rich bright-green, and are beneath either of pale sea-green or quite white, with soft white cottony down, and they have waved margins and soft downy stalks. In March and April the leafless boughs are laden with the abundant yellow, almost globular, fragrant catkins.

This is a useful Willow, for its tough white wood is employed in making handles for agricultural implements, and for hurdles and other rustic purposes; and when burnt it yields good charcoal for the manufacture of gunpowder. It is thought to furnish one of the best underwoods for coppices, and good fences are made of it, which will grow well either in wet or dry soils; though the tree, when wild, is usually found in woods and dry pastures, and seldom occurs near rivers. The bark affords an excellent tonic medicine, and it is also used by the Highlanders to tan leather.

The Goat Willow, or Grey Willow, or Saugh, as it is often called, would probably be preferred to the other Willows too, because of its beauty at the season when country people go palming or palmsing, as it is termed. In some parts of Kent this practice is still very common, and men and boys come in from the country to the towns, on Palm Sunday, wearing the golden catkins in their hats, and carrying the blooming wands in their hands. The custom was much more general a few years since, than it is now, near the Metropolis, and the Willow-boughs were usually exposed for sale in Covent Garden Market on the Saturday before Palm Sunday. In some parts of Germany, as about Munich, the peasants on Palm Sunday may be seen on the road approaching the town, bearing in their hands the branches of Willow-catkins, mingled with holly and mistletoe; for the latter plant is, in Germany, connected with usages of religion. The catkins are blessed by the priest, and are termed by German children, as by English ones, Palms. As Goethe says—

"In Rome upon Palm Sunday,
They bear true palms;
The Cardinals bow reverently,
And sing old psalms:
Elsewhere their psalms are sung
'Mid olive-branches:
The holly-bough supplies their places
Among the avalanches:
More northern climes must be content
With the sad Willow."

The idea of the sadness of the Willow is a very old one, and we find it alluded to by our prose writers and poets long before the introduction into this country of the tree called the Weeping Willow. It probably originated in a Scriptural association, and has come down to us from those times when captive Israel hung their harps on the Willows, and wept because asked to sing "the Lord's song in a strange land." It is a touching episode in their history, and one which has appealed to the hearts of all who have loving memories of their home, their country, and their God. So general is the idea of the sadness of the Willow, that to "wear the Willow" has become a

familiar proverb. Old Fuller, referring to the Willow, says: "A sad tree, whereof such as have lost their love make their mourning garlands; and we know that exiles hung their harps on such doleful supporters." He adds, that it grows so incredibly fast that there was a "byeword in Buckinghamshire, that the profit by Willows will buy their owner a horse, before that any other tree will pay for his saddle." "Let me add," he says, "that if greene ash may burne before a queene, withered Willows may be allowed to burn before a lady." Chatterton has a song, of which the burden runs thus:—

'Mie love ys dedde,
Gon' to his deathe-bedde
Al under the Wyllowe-tree,'

Herrick, too, says of the Willow:—

"Thou art to all lost love the best,
The only true plant found,
Wherewith young men and maids, distrest
And left of love, are crown'd.

"When once the lover's rose is dead,
Or laid aside forlorn,
Then willow-garlands round the head
Bedew'd with tears are worn."

Most of the Willows are fertilized by the agency of the wind as a pollen carrier (*anemophilous*), but the Goat Willow and its varieties are fertilized by bees and moths.

The very beautiful variety of this tree, the Kilmarnock Willow, has of late years much interested botanists. It received its name, not because peculiar to the place, but because reared in the nursery-garden there. An enthusiastic botanist of Ayr, Mr. James Smith, sent to Mr. Lang of Kilmarnock, about fifty years since, a plant of this beautiful tree. He did not state on what spot he found it, and as he died shortly afterwards, the locality in which it grew remained unknown; though, as the Goat Willow is a common plant all over Scotland, he, in all probability, found the variety growing wild. Mr. Lang, at a later season, had procured from Mr. Smith a few more plants, which he has since been engaged in propagating; and, in 1852, nearly a thousand plants of this beautiful Willow were purchased from him by Sir W. J. Hooker, for the Botanic Gardens of Kew.

This variety of the Willow has broad, glossy, deep-green leaves, and it flowers very freely in spring. Its branches are stouter than those of the Weeping Willow (*S. babylonica*), but it is a true weeping species, its branches always bending gracefully down; and it is the only native Willow which really deserves to be so called, for the Willows so often overhanging streams in gardens and parks are species introduced from other lands. The Weeping Willow (*S. babylonica*) was probably brought into this country by Tournefort, though often said to have been first planted by Pope at his villa at Twickenham. This graceful tree is grown now in all European countries, as well as in Asia and Africa. The Chinese greatly esteem it in their ornamental scenery, as we may see by their pictures and porcelain; and in Arabia, on festive occasions, a sprig of this Willow is placed among the bouquets of

lilies and orange-flowers, and is the favourite symbol of a graceful woman. It is somewhat doubtful whether this is the species on which the Israelites hung their silenced harps, for the Euphrates is bordered by many pale grey-green osiers; but Celsius believes this to be especially the "Willow by the brook," intended by the patriarch Job, when he says of Behemoth: "The shady trees cover him with their shadows; the Willows of the brook compass him about." A variety of this tree, called Napoleon's Willow, from its growth near the tomb of that hero at St. Helena, is often seen in gardens; and we have also an American Weeping Willow.

27. **Grey Sallow** (*S. cinérea*).—Leaves inversely egg-shaped-lanceolate, autumnal ones pointed, even, serrated, netted with prominent veins, nearly smooth and glaucous beneath, with the margins sometimes rolled under; stipules rounded, toothed, upper ones often half heart-shaped; style very short or wanting. Varieties differing in the form and texture of their autumnal leaves have been described as *S. aquática* and *S. oleifólia*. This is a very common Willow in our wet hedgerows, and on the river brink, sometimes bordering the stream for a long distance with its bushy growths, being rarely more than seven or eight feet high. At other times, however, this Sallow rises into an erect tree, twenty or thirty feet in height, and its branches are either spreading or they droop down, and almost touch the water—

> "Where hangeth down the old accustom'd Willow,
> Hiding the silver underneath each leaf,
> So drops the long hair from some maiden's pillow
> When midnight heareth the else silent grief;
> There floats the water-lily like a sovereign,
> Whose lonely empire is a fairy world,
> The purple dragon-fly above it hovering,
> As when its fragile ivory uncurl'd."

We cannot, however, praise the beauty of this tree; neither is it one of the useful species, though its branches are woven into coarse wicker-work. It is distinguished from the other common Sallows by the rusty glittering hue of its foliage. "This," Sir J. E. Smith says, "lies more perhaps in the fine veins of its leaves than in the pubescence sprinkled over them, which consists of minute prominent shining hairs, totally unlike the depressed silkiness of some other Willows." The rusty colour, indeed, increases after the specimens have been long dried, but is visible in some degree in the growing plant, especially towards the autumn.

The leaves of this Sallow are from an inch to an inch and a half in length, and they are sometimes blotched and variegated. The variety termed *aquatica* has much broader and thinner leaves, of uniform dull grey hue, and without the rusty tint which distinguishes the ordinary form. Its branches and twigs are also very brittle. In the plant called the Olive-leaved Sallow, the leaves, which are, when young, densely hoary, gradually become green, and acquire the rusty hue; and they are throughout their growth of leathery texture, and not pliant as in the other varieties. The branches are rounded, and more or less hoary when young.

28. **Round-eared or Sallow Trailing Sallow** (*S. aurita*).—Leaves inversely egg-shaped, with spreading teeth, wrinkled with veins, more or

1 ROUND-EARED SALLOW
Salix aurita.

2 GREATER ROUND-EARED S.
S. caprea.

3 DARK-LEAVED S.
S. nigricans.

4 INTERMEDIATE WILLOW
S. laurina.

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less downy, very downy beneath, blunt with a small hooked point; stipules roundish; style very short. This, too, is a common Sallow in our moist woods and thickets; and Mr. Borrer observes, that "it is one of the least equivocal species." Its large-stalked stipules and its foliage, blistered like a cabbage-leaf, form a marked character, although its leaves vary in size, and in the form of the outline. It sometimes becomes a bushy tree, but is more commonly a shrub, about three or four feet high, having branches which trail to a great length along the ground, and entangle themselves among the neighbouring bushes. The leaves are on short downy footstalks, and are one or two inches long, and more or less contracted towards the base; the upper side is of dark green, the under paler and somewhat glaucous.

Group XI. PHYLICIFOLIÆ, NIGRICANTES, AND BICOLORES.—*Borr.*

Stamens 2; capsules stalked; style long; catkins lateral and sessile, or on short bracteated stalks; leaves toothed or serrated; stipules with glands inside, or at the base. Shrubs or small trees.

29. **Dark-leaved Sallow** (*S. nígricans*).—Young shoots thickly downy or hairy towards the summit; leaves usually dull green, glaucous beneath, and becoming black when dry. Several varieties of this Willow, differing in having prostrate or erect stems, in the downiness of the branches, in the smoothness or silkiness of the ovaries, and somewhat in the outline of the leaf, have been described as *S. cotinifolia*, *S. forsteriána*, *S. rupéstris*, *S. hírta*, *S. andersóniana*, *S. damascéna*, or *S. petræa*. Sir William Hooker and Dr. Arnott remark that there are, besides, numerous intermediate forms in this most variable species of Willow; but add, that in all native specimens, whether cultivated or wild, the foliage constantly turns black when pressed and dried, however carefully done.

The Dark-leaved Willow is a large bushy shrub, scarcely ever attaining the height or form of a tree. Its branches are round and usually rather brittle, except in the variety with trailing stems, sometimes termed *S. rupestris*, in which the branches are tough. The catkins appear in April. The plant is not one of our useful or ornamental Willows. It is common on mountains, chiefly in the north of England and Scotland, and grows also in osier-grounds, and on riversides and moist lands.

30. **Intermediate Willow** (*S. laúrina*).—Young shoots and leaves densely downy or hairy towards the summit; leaves finally becoming smooth, glaucous beneath, dull green above; after drying, the young ones only becoming sometimes slightly black. Several forms of this species occur, differing in the degree of hairiness of the ovaries, and the shape and hairiness of the leaves. These have been described as *S. propínqua*, *S. ténuior*, *S. bícolor*, or *S. tenuifólia*. This Willow has much the same dull appearance as the last, and its leaves are thin. It is a shrub, or sometimes a small tree, occurring in woods and thickets, or by riversides, in several parts of the kingdom, especially in England.

31. **Tea-leaved Willow** (*S. phylicifólia*).—Leaves and shoots soon quite smooth, the latter dark green, rigid, glossy above and glaucous beneath, not black when dried; stigmas entire or 2-cleft. This Willow is, in each of

its forms, a twiggy bush. A very large number of plants now included under the same name were formerly considered distinct species; they differ in the form and relative length of the stigma and style, in the degree of silkiness of the ovaries, and in the exact shape of the leaves. They have been termed *S. radícans*, *S. davalliána*, *S. weigeliána*, *S. amœna*, *S. nitens*, *S. croweána*, *S. dicksónia*, *S. laxiflóra*, *S. tetrápla*, *S. borreriána*, and *S. phyllyreifólia*. They grow chiefly in valleys in mountainous districts, attaining in some cases, as in the variety which has been termed *S. borreriána*, the height of ten feet; but in general they are quite low shrubs. The leaves vary in length and outline, not only in the different varieties, but they are said, by the authors of the "British Flora," to vary even on the same bush. The catkins appear in April and May.

Group XII. VACCINIIFOLLÆ.—*Borr.*

Stamens 2; ovaries densely downy, nearly sessile; style as long as the stigma; catkins compact, appearing with the leaves, terminal or on short few-leaved lateral shoots; leaves more or less veiny above; stipules none or minute. Small, erect, or spreading, rarely prostrate shrubs; stems above ground.

32. **Small Tree Willow** (*S. arbúscula*).—Leaves lanceolate-egg-shaped, or broadly or roundish egg-shaped, finely serrated. In one variety opaque above, and of a sea-green hue beneath; in another, prominently veined above, green, but scarcely shining on both sides. The forms included in this description are those which have been termed by various writers *S. myrsinites*, *S. vacciniifólia*, *S. venulósa*, *S. carináta*, and *S. prunifólia*. They differ in the outline, in the degree of silkiness of the leaves, and in the more erect or prostrate growth of the stem. The Small Tree Willow is not infrequent on Highland mountains, and is usually a very low shrub, with red or green branches, more or less trailing, but sometimes erect. The leaves are often folded so as to form a keel; in other cases they are flat and narrow. The catkins appear in June and July.

Group XIII. MYRSINITES.—*Borr.*

Stamens 2; ovaries silky, stalked; catkins appearing with the full green leaves, terminal on lateral or terminal leafy shoots, soon becoming lax; leaves veiny, never glaucous beneath; stipules egg-shaped or lanceolate. Small much-branched shrub; stems above ground.

33. **Green Whortle-leaved Willow** (*S. myrsinites*).—Leaves waved, serrated with very prominent veins, often hairy, at length shining; blackish when dried; in one variety roundish or elliptical, or inversely egg-shaped; in another, smaller and somewhat heart-shaped at the base; in another, egg-shaped or oblong and acute. This description includes the variety which has been described as *S. arbutifólia*. This is a low shrub, occurring but rarely on the Highland mountains. Its leaves are of a bright and glossy green, varying both in form and size, and the short catkins appear in June. The whole plant is very black when dry.

34. **Smooth-leaved Alpine Willow** (*S. procumbens*).—Leaves oval, rarely acute, obscurely serrated, shining, quite smooth, not black when dried;

1. TEA-LEAVED WILLOW.
Salix phylicifolia.

2. SMALL TREE W.
S. arbuscula.

3. GREEN WHORTLE-LEAVED W.
S. myrsinites.

Pl. 206.

catkins long; style cloven to the middle or below it, as long as the stigmas. This Willow, which is the *S. retúsa* or the *S. lævis* of some writers, is a low shrubby plant of the Scottish Highlands, its short round downy branches being of a greenish hue. Mr. Forbes describes its leaves as from one inch to an inch and a half long and upwards of an inch broad, hollowed out, or somewhat heart-shaped at the base, serrated, bright green, shining, and always perfectly smooth. It bears its large long catkins in June. It has for many years been cultivated in gardens, where it is a very ornamental shrub.

Group XIV. HERBACEÆ.—*Borr.*

Stamens 2; ovaries shortly stalked; style as long as the stigma; catkins appearing with the full-grown leaves, terminal, few-flowered; leaves roundish, serrated, with prominent veins, smooth but not glaucous. Dwarf alpine prostrate shrubs, the stems creeping below the surface.

35. **Least Willow** (*S. herbácea*).—Leaves roundish, serrated, smooth, shining, veined; ovaries smooth. This little plant is interesting for its beauty, as well as because it is the smallest, not only of its tribe, but of all our native trees. It grows on Snowdon and other Welsh mountains, being abundant on those of the Highlands of Scotland, and is found in many parts of Europe and North America. In Great Britain, it is the last plant with a woody stem which greets the traveller who ascends mountains, and few of our heights of eight or nine hundred yards' elevation are without it. It is usually about four inches high; but as Sir W. J. Hooker remarks, it is not quite so small as is usually supposed, for its stems divide, and creep below the surface of the earth. As Dr. E. D. Clarke said of it, it is a perfect tree in miniature; and root, trunk, and branches may all be laid between the leaves of a pocket-book. M. De Candolle observes that, in Switzerland, "Some species of Willow spread over the uneven surface of the soil; and as their branches are often covered with the earth which the heavy rains wash over them, they present the singular phenomenon of trees which are more or less subterranean. The extremities of these branches form sometimes a kind of turf; and the astonished traveller finds himself, as we may say, walking on the top of a tree." It is the *S. herbácea* which most frequently presents this appearance, as it often grows on steep slopes of loose soil, which are readily penetrated by the melting snow and rain. This Willow is used by the Laplanders in tanning leather.

Group XV. HASTATÆ.—*Borr.*

Stamens mostly 2; anthers permanently yellow; ovaries smooth; style long; stigmas entire or 2-cleft; catkins appearing before the leaves, sessile, terminal and lateral, large, blunt, with very shaggy and silky scales; leaves large, glaucous beneath; stipules large on the autumnal shoots. Shrubs, with numerous irregular, crooked branches, and hairy young shoots.

36. **Apple-leaved Willow** (*S. hastata*).—Leaves egg-shaped, acute, serrated, waved, crackling, smooth, heart-shaped at the base, glaucous beneath; stipules unequally heart-shaped, longer than the broad footstalks; catkins very woolly; ovaries distinctly stalked. Although this Willow is usually classed with the British species, yet it can hardly be considered as even

naturalized in the few spots on which it has been seen. It was discovered by Mr. F. Drummond beside a small stream that passes through the sands of Barrie near Dundee, but the record has not been confirmed. The authors of the "British Flora" remark: "It is most improbable that this plant, which is truly alpine on the Continent, growing in Switzerland only at great elevations, should be naturalized on the sands of Barrie, and the Norfolk station is entirely hypothetical and extremely unlikely."

This species, which is sometimes termed *S. malifólia*, has shining leaves, three inches long and about half as wide, and blackish branches, and has more the appearance of an apple-tree than a Willow. Its stem, in its wild state, is usually one or two feet high; but when cultivated, the plant becomes a small spreading tree, about six feet in height. It bears, in May, very compact shaggy catkins, densely covered with silvery hairs, and about an inch and a half long.

37. **Woolly Broad-leaved Willow** (*S. lanáta*).—Leaves broadly oval, pointed, entire, shaggy; stipules oval, pointed, entire; barren catkins covered with yellow silky hairs; ovaries almost sessile. This species is sometimes called the Golden Willow (*S. chrysantha*), on account of the beautiful golden catkins which in May and June ornament its boughs, while the young leaves are just expanding. Wahlenberg says of this Willow, that it is the most beautiful one in Sweden, if not in the whole world. "The splendid golden catkins," he remarks, "at the ends of the young branches, light up, as it were, the whole shrub, and are accompanied by the tender foliage, sparkling with gold and silver." The stem is about three or four feet high, with numerous irregular branches, which, while young, are downy. Its leaves are wavy at the edge, from an inch and a half to two inches and a half long, very grey, and almost white with the long, soft, silky hairs, which entirely cover the upper surface, while the sea-green-tinted under surface is beautifully netted with veins. The catkins are thought to yield more honey than those of any other species, and perhaps they would serve the same purpose as those of the celebrated little Willow called in the East *Calaf*, from whose blossoms a medicinal and fragrant water is distilled. The Woolly Broad-leaved Willow is a rare plant of the Scottish mountains.

38. **Sadler's Willow** (*S. sadleri*).—Leaves broadly egg-shaped, sometimes heart-shaped at base, entire, smooth and cottony above, netted and naked beneath; stipules absent; catkins cylindric at the tips of leafy branches, woolly, turning dark brown; capsules naked, on slender stalks, styles persistent. This species has hitherto occurred only on rocky ledges in Glen Callater, at an altitude of 2,500 feet.

5. Poplar (*Pópulus*).

1. **Great White Poplar or Abele** (*P. alba*).—Leaves roundish, heart-shaped, lobed, and angularly toothed, cottony and perfectly white beneath, those of the young shoots heart-shaped, 5-lobed; leaf-buds downy; scales of the catkins notched at the end. This handsome species is a doubtful native of this kingdom, though in many a mountain wood

"The Poplar, that with silver lines his leaf,"

1. SMOOTH LEAVED ALPINE WILLOW.
Salix procumbens
2. LEAST W.
S. herbacea.
3. APPLE LEAVED W.
S. hastata.
4. WOOLLY BROAD LEAVED W.
S. lanata.

Pl. 209.

may be seen towering above the other trees, attaining the greatest luxuriance where the soil is moist. In many places it is planted for the contrast afforded by its dark-green foliage, varied with the white under surface; and having the old Dutch name of Abele, it was probably brought into this country from Holland. It is of very rapid growth, making, in favourable situations, shoots three inches in diameter, and sixteen feet long, in a single season; and is sometimes eighty or ninety feet high. Bailey has referred to the tall Poplars which overtop their leafy companions:—

"The black yew hedge, like a beleaguering host,
Round some fair garden province; here and there
The cloud-like laurel-clumps sleep soft and fast,
Pillow'd by their own shadows; and beyond,
The ripe and ruddy fruitage; the sharp firs
Fringe like an eyelash on the faint blue west;
The oaks which spread their broad arms to the wind,
And bid storms come and welcome—there they stand,
To whom a summer passes like a smile;
O'er all, the giant Poplars, which maintain
Equality with clouds half-way up heaven,
Which whisper with the winds none else can see,
And bow to angels as they wing by them."

In April we may see the fertile catkins of this Poplar, which are about three inches long, and the shorter barren ones appear soon after. In a few weeks the seeds ripen, and they with their cottony tufts lie scattered around the tree, accounting for the Arab name of the White Poplar, *Shairat-al-bak* (the Gnat, or Fly-tree). The young shoots of this Poplar have a purplish tinge, and are thickly invested with the downy covering; and the full-grown leaves are on footstalks, about an inch long, and, when old, sometimes smooth on both sides.

The characteristic name of White Poplar, referring to the hue both of the seed-tufts and the leaves, has its synonym in various parts of the world. In France, the tree is called *Blanc de Hollande*, and *Peuplier blanc;* and in Germany, *Weisse Pappel, Silber Pappel, Weisseaspe*, and *Weissalber Baum;* while it is the *Abeel-boom* of the Dutch, from which latter name our Abele is probably derived. Large numbers of these trees grow on the borders of the Tigris and Euphrates, and some commentators have thought this Poplar to be the Abeel-shittim of Scripture, from which the shittim-wood was obtained. There is good reason, however, for believing that this was the wood of the *Acacia seyel*, a plant fragrant enough to be suitably associated with the other odoriferous shrubs in that glorious promise yet to be fulfilled, when God has declared that He will plant in the wilderness the cedar, the shittah, the myrtle, and the oil-tree. Dr. Royle thinks that our White Poplar is, in all probability, the plant referred to by the Prophet Hosea, when he says, "They sacrifice upon the tops of the mountains, and burn incense upon the hills under oaks and Poplars." The Septuagint renders the latter "White Poplars," and our Abele is a common tree in many of the countries mentioned in Scripture history. Belon remarked that the White and Black Poplars, with some fruit-bearing trees, render the plain of Damascus like a forest; while the white species is frequent about Aleppo and Tripoli, and is still

called by one of its ancient Arabic names, *Haur* or *Hor*, which is the word used in the Arabic translation of the passage in Hosea.

Whether this Poplar is, or is not, truly indigenous to this country, it is now very generally distributed. It is a native of most European countries, and is usually found in woods and thickets in which the soil is somewhat moist. Turner, writing in 1568, says that the White Aspe is plentiful in Germany and Italy, but that he does not remember ever seeing it in England; but Gerarde, who published his Herbal about thirty years after, remarked that it grew in a few places in the kingdom; and Evelyn says that the tree had of late been much transplanted from Holland. It does not flower in Scotland.

This Poplar is in some country places called Rattler, from the quick movement of its leaves. Its young buds have in spring-time a very pleasant balsamic odour, and afford a resinous substance resembling storax; but this is yielded in far greater quantity by the Canadian Balsam Poplar, and is used medicinally. Several attempts have been made to manufacture paper from the white cottony seed-tufts, and cloth has been made from it. Pallas endeavoured to prove that the cotton was of equal worth to that of the cotton-plant, but it is far inferior. Thin slips of Poplar-wood, called in France *Sparterre*, are woven into those delicate bonnets so commonly worn on bridal occasions, and known as chip bonnets by ladies. The leaves of the tree are, in Sweden, eaten by cattle.

The ancients believed that amber was formed of the clammy substance which dropped from the Poplars into the river. Hence our old poets refer to this idea; and Prior says:—

"For thee the Poplar shall its amber drain."

Ancient poets also described Hercules as wearing a wreath of White Poplar, and those who offered sacrifices to this hero placed its leaves around their brows. The tree is much used on the Continent for planting by the sides of roads, for its foliage does not prevent the access of light and air, while it is very ornamental when mingling with the dark-leaved Black Poplar and the grey tint of the Willows. In some parts of France it also grows wild in forests, so abundantly as to give a peculiar character to the scenery. Its wood, like that of all the Poplars, is well suited for heating ovens, and it is largely so used in France, where the Parisian baker knows it as his *bois blanc*. The wood of this species is not so hard as that of the Grey Poplar, and is chiefly used for coarser work, or in the manufacture of children's toys.

2. **Grey Poplar** (*P. canéscens*).—Leaf-buds downy, but not clammy; leaves roundish, deeply waved, toothed, lobed only when young, hoary and downy beneath, old ones sometimes smooth; stigmas 8, purple; scales of catkins deeply cut. This tree, though a doubtful native, is common in several parts of this kingdom, especially in Norfolk, in wet meadows, and also on dry heathy places. The authors of the "British Flora" remark, that it is usually confounded with the last on account of its downy leaves, though Dr. Bromfield regards it as a variety of the Aspen. It is a tall and handsome tree, with the usual graceful motion of the tribe when stirred by the wind; the under surface of its leaves is of a greyish tint, and not quite of

1. GREAT WHITE POPLAR. *Populus alba.*
2. GREY P. *P. canescens.*
3. TREMBLING P. OR ASPEN *P. tremula.*
4. BLACK P. *P. nigra.*

Pl. 210.

the snowy whiteness of the foliage of the Abele. It is of slower growth than any other of our Poplars, and yields the best wood of them all. The boarded floors which still, in Norfolk, retain their old Norman name of *planchers*, are commonly made of it; and it is thought, for many purposes, to be scarcely inferior to the wood of the Norway fir. Sir J. E. Smith says that it will not readily take fire like resinous woods. It is regarded as a sub-species of *P. alba*, or a hybrid between that and *P. tremula*.

3. **Aspen or Trembling Poplar** (*P. trémula*).—Young branchlets hairy; leaves roundish, toothed, downy when young; footstalks flattened. Who of us, accustomed to notice plants, has not on a summer-day, at some time or other, looked up wonderingly into the Aspen-tree, when it was quivering and rustling into gentle music, and marvelled where was the breeze which bade it answer to its touch? It must indeed be a dead calm, when Thomson's description could be true:—

> "A perfect calm; that not a breath
> Is heard to quiver through the closing woods,
> Or rustling turn the many twinkling leaves
> Of Aspen tall."

How often, as we have looked upon its tall, slender canopy of drooping branches, rustling so tremulously, has the mind recurred to the old associations connected with the tree! The ancients are said to have called the Poplar *Populus*, the Tree of the People, because its readily-moved and ever-stirring leaves were, like the ever-restless multitude, quickened into action by the slightest breath; and a Poplar of one species or another has always been regarded in modern times as the Tree of the People. It may not have been the Aspen Poplar especially to which the ancients referred, though this is the most easily moved by the zephyrs of any of the species; but there is good reason for believing that this is the plant intended by the Scripture writer of a passage of David's history, though rendered by our translators by another name. "Let it be," said the great Jehovah to the Israelitish warrior, "when thou hearest the sound of a going in the tops of the mulberry-trees, that thou shouldst bestir thyself;" but it was perchance to the quivering Aspen, which adorns so plentifully the ravines of Palestine, that David looked for the indication. The ancients, too, said of the foliage, that it might be likened to the unceasing course of time. Pliny remarks, "As for the Aspen-tree, or White Poplar, it maketh little or no shade at all, the leaves keep such a wagging and trembling." Old Gerarde, too, with little gallantry, refers to the restless leaves, and says, "It may be called Tremble, after the French name, considering it is the matter whereof women's tongues were made;" but he takes care to shield himself from some replying woman's tongue by adding, that, "as the poets and some others report, these seldom cease wagging." Our earliest poets, as well as the moderns, refer to it. Chaucer says—

> "And quake as doth the leaf of Aspen green;"

while Spenser tells of one

> "Whose hand did quake
> And tremble like the leaf of Aspen greene."

Indeed, to "shake like an Aspen" is one of our oldest English proverbs. In our own days, many poets allude to its movement. Leyden says :—

"Again beside this silver riv'let's shore,
With green and yellow moss-flowers mottled o'er,
Beneath a shivering canopy reclined
Of Aspen-leaves, that wave without a wind,
I love to lie when lulling breezes stir
The spiny cones that tremble on the fir."

Miss Jewsbury, too, looked on the Aspen to draw a lesson from its restlessness, which we might well take to our hearts :—

"I would not be
A leaf on yonder Aspen-tree,
In every fickle breeze to play
So wildly, weakly, idly gay,
So feebly framed, so lightly hung,
By the wings of an insect stirr'd and swung;
Thrilling even to a redbreast's note,
Drooping, if only a light mist float;
Brighten'd and dimm'd like a varying glass
As shadow or sunshine chance to pass.
* * * * *
Spirit, proud spirit, ponder thy state,
If thine the leaf's lightness, not thine the leaf's fate;
It may flutter and glitter, and wither and die,
And heed not our pity, and ask not our sigh;
But for thee, the immortal, no winter may throw
Eternal repose on thy joy or thy woe;
Thou must live—live for ever, in glory or gloom
Beyond the world's precincts, beyond the dark tomb;
Look to thyself, then, ere past is Hope's reign,
And looking and longing alike are in vain;
Lest thou deem it a bliss to have been, or to be,
But a fluttering leaf of yon Aspen-tree."

There is a tradition among the Highlanders that the Cross was made of the wood of this Poplar; and Mr. De Quincey says that the legend is "European, or rather co-extensive with Christendom, that it shivers mystically in sympathy with that mother tree, which was compelled to furnish the materials for the Cross." Yet an old notion was once very prevalent that the Cross was formed of four pieces of wood, signifying the four quarters of the globe; and the palm, cedar, olive, and cypress were believed by some to be the chosen trees, while others substituted the pine and box for the cedar and palm. Our fathers certainly ought to have known of what wood it was made, if portions of this sacred relic were as common in other places as they were at Bury St. Edmunds, where the visitors who went to examine into the state of the monastery, at the time of the Reformation, found "peces of the Holy Cross, enough to make a hole cresse."

But we are wandering away from the Aspen, which grows very rapidly, and when at its full height is a middle-sized tree, with a trunk free from branches, and covered with a smooth grey bark, which cracks as it grows older. The young tough and pliant shoots are of a reddish-green colour, and when the Aspen is old its branches often droop. The leaves are of a paler green beneath, and a bright glossy green above, varying much in outline. The margin is somewhat waved, and the footstalk often longer than

the leaf itself. This footstalk is flattened vertically at the upper part, and by this form counteracts the ordinary waving motion of leaves in the wind, and hence the quivering movement. This is the earliest flowering Poplar, its catkins appearing in March. It will, in dry soils, live many years, but it never attains the size of the Abele. The roots lie very near the surface of the soil, and were considered by Dr. Withering so to impoverish the land as to prevent other plants from thriving near it; and he thought, too, that the leaves destroyed the grass. The foliage of the Aspen is, however, in countries where it is abundant, of much value as food for cattle, and both in France and Germany it is used for this purpose, both when green and dried. Many owners of these trees cut regularly, every two years, the leaves and spray; and sheep are so fond of this food that the foliage sometimes constitutes the chief worth of the Aspens. The tendency of the wood of this tree to crack and split lessens its value, but it may be employed in buildings in dry places, and is well fitted for heating ovens; while, being white and tender, it is used by turners, and the white pails which hold the whiter milk of the dairy are often made of Aspen-wood. It serves for clogs and sabots, and is of old repute as the best wood for the making of pattens. This last manufacture has, for some years past, been on the decline, for pattens are now but of rustic use, though, even at the commencement of the present century, they were commonly worn in wet weather by ladies. But in past times pattens formed part of a gentleman's daily costume; and Camden, in his "Remains," tells how "their shoes and pattens are snowted and piked, more than a finger long upwards." The Church of St. Mary's-at-Hill, whose old records still bear evidence of many a long-discarded usage, has its item, in 1491, for "ij paire of pattens for the priest." Mr. Albert Way mentions that, in 1464, the craft of "patyn-makers" petitioned the Crown that the statute of the 4th of Henry V., which forbade them to use the wood of the Aspen-tree, as being that which was used by the fletchers, might be repealed—representing that "it was the best and lightest timber to make of patyns and clogges."

The bark of the Aspen is somewhat astringent, and, as well as that of the White and Black Poplars, has been used for tanning. In the Highlands of Scotland it is sometimes burned for torches. When powdered, the bark is given as a medicine to domestic animals; and in Russia, where the tree is frequent, this bark is commonly prescribed by the physician to his patient.

The Aspen grows in high latitudes, and is found near the Frozen Ocean; while it is abundant also throughout Southern Europe and in Asia Minor, usually preferring low soils, but found on some of the highest mountains of Scotland. It is called by the French, *Le Tremble*, and by the Italians, *La Tremella*, as well as *L'Alberallo* and *L'Alberetto*. The Germans term it *Zitterhappel*, and *Espe;* and the last name is probably the origin of our Aspen and Aspe. In Norfolk, the tree is commonly called Ebble. It is thought by most botanists to be the only species of Poplar indigenous to this kingdom.

4. **Black Poplar** (*P. nigra*).—Leaves triangular, narrowing to a point, serrated and smooth on both sides; stipules egg-shaped and pointed; stigmas 4, simple, spreading; scales of the catkins cut into segments nearly to the middle. If we happen to glance from the Abele, when the wind turns up

its white leaves, and then look at the Black Poplar, we are ready to admit the appropriateness of the name of the latter tree. The bark, which is at first of a dim ash-colour, deepens into black as it becomes older, and the leaves are dark green, and form a striking contrast to the whitened under-surface of those of the Abele. Its leaves, like those of all the Poplars, are very tremulous, and they served Homer, as well as many a modern bard, for a simile :—

"Like Poplar-leaves when zephyrs fan the grove."

Wilcox thus describes the calmness of summer noonday :—

"O'er all the woods the topmost leaves are still;
E'en the wild Poplar-leaves, that, pendent hung
By stems elastic, quiver at a breath,
Rest in the general calm. The thistledown
Seen high and thick by gazing up, beside
Some shading object, in a silver shower
Plumb down and slower than the slowest snow
Through all the sleepy atmosphere descends;
And when it lights, though on the steepest roof,
Or smallest spire of grass, remains unmoved."

This tree is not erect and spiry, like the Lombardy or Italian Poplar (*P. fastigiata*), which is believed to be but a variety of it. It has wide-spreading branches, forming a good extent of leafage, and is a very large tree, sometimes larger even than the Abele. It has been known in this country to reach the height of ninety feet, and may often be seen seventy or eighty feet high. Though it is not likely that this Poplar is indigenous, it is now very common by river-banks and on other moist lands. It well answers the purpose of the planter, for it is of rapid growth, bears lopping, and both in France and Italy it is commonly pollarded, and used as a support to the trailing vines. It looks very well in the spring, as its catkins, which are to be seen in March and April on the leafless branches, are of a dark rich red colour, and are very welcome to the insect race; and in May, the foliage is beginning to clothe the boughs. By the end of this month the catkins have ripened their seeds, and away they float on the winds, or lie whitening the ground beneath by the cottony down with which they are invested, and which has been used in the manufacture of paper, and is wrought, in Germany, into a kind of wadding as well as into hats. It is, however, borne away so readily by the breeze, that it requires much pains to collect enough for any useful purpose. The leaves and young shoots are eaten by the beaver; and in Russia the bark is powdered, and given as food to sheep; while, both in that and this country, it has been used in tanning leather. The poor in Norway and Kamtschatka often make their bread of the dried bark of the Poplar. The wood is yellow, soft, and fibrous, and furnishes the materials for some light articles, as clogs and bowls. The tree is comparatively short-lived.

The crushed buds of this Poplar yield a pleasantly fragrant substance, which burns like wax, and which was believed by our old herbalists to be a vegetable remedy of great power in various diseases. The young shoots are used in wicker-work; or, stripped of their leaves, serve the housewife for brooms.

This Poplar has in summer large drops of clear water lying upon its leaves, and these only need some stirring wind to send them trickling down to earth, and to remind us of Spenser's description :—

"The Poplar never dry."

The ancient poets fabled that these drops were the tears of the sisters of Phaethon, who, wandering by the sides of the Po, were changed into trees :—

"And eke those trees in whose transformed hue
The Sun's sad daughters wail'd the rash decay
Of Phaethon, whose limbs with lightning rent,
They gathering up with sweet tears did lament."

6. Beech (*Fágus*).

Common Beech (*F. sylvática*). — Leaves egg-shaped, smooth, very slightly toothed, and fringed at the margin. A green and full shadow is afforded to the country rambler by the crowded and usually straight branches of the Beech-tree, covered in summer with a profusion of thin leaves, among which many a gay bird is fluttering. Its boughs have long been celebrated for the shelter which they have given to heroes, to poets, and shepherds; and the classic reader would, in some moods of mind, agree with Cowper—

"Heroes and their feats
Fatigued me, never weary of the pipe
Of Tityrus, assembling as he sang
The rustic throng beneath his favourite Beech."

As Campbell had his valued Beech-tree, which he had watched for "twenty summers," so Virgil loved one, too, for the abundant shadow which it gave him. Many are the single or grouped trees which have been celebrated for interesting associations, like the Burnham Beeches, beneath which Gray wandered, to be soothed in his musings by the gentle whisperings of the "nodding beeches," and which, he says, "are always dreaming out their old stories to the winds." Then there are Saccharissa's Beeches, at Penshurst in Kent, the trees which Waller apostrophised in the inflated language so remote from the utterances of feeling, that it awakens no sympathy for his unrequited affection :—

"Ye lofty Beeches, tell this matchless dame,
That if together ye fed all one flame,
Ye could not equalize the hundredth part
Of what her eyes have kindled in my heart."

The Purley Beeches, believed to have grown in the time of the Conquest, are interesting trees, as is that venerable tree of Windsor Forest, which Strutt has engraved in his "Sylva Britannica," and which, older still, is supposed to have reared its head in the time of the Saxon kings. Camden describes it as "growing on a high hill (Sunning Hill), and overlooking a vale lying out far and wide, garnished with corn-fields, flourishing with meadows, decked with groves on either side, and watered with the Thames." This tree

was found to measure thirty-six feet in circumference, at thirty feet from the ground. The tree called Pontey's Beech, at Woburn Abbey, is a hundred feet high; and instances are recorded of noble trees exceeding even this in magnitude. If we may believe Fuller, Buckinghamshire takes its name from the abundance of the Beech, which was called by the Anglo-Saxons *Buchen;* and "Buchen ham," the home or land of Beeches, was then appropriate. The Germans call the tree *Buche;* and in France it is termed *Hêtre.*

Some writers have thought that the Beech was not an indigenous tree, because Cæsar says that he did not find it in Britain. Commentators have questioned whether the *Fagus* of the Romans was our Beech; but the conclusion seems to be general that it was so, and that the great Roman, never having penetrated probably to those parts of the country where it is abundant, was unacquainted with it as a tree of this island.

The Beech grows in the temperate countries of Europe, from the south of Norway to the Mediterranean Sea, and also in Asia Minor and Japan. Either this species, or a variety, is common in the American forests; and Bryant, describing a winter day, refers to

> "The snow-bird twittering on the beechen bough;"

and adds—

> "From his hollow tree
> The squirrel was abroad, gathering the nuts
> Just fallen, that asked the winter cold, and sway
> Of winter blast, to shake them from their hold."

The Beech is generally in full green by the end of May, when the flowers appear among the delicately-fringed leaves. The barren flowers form drooping tassel-like heads, and soon fall off; and the brown, fertile, solitary flower is on a slender stalk, and is gradually developed into the nut or mast of the Beech. Children well know these nuts, which burst out when ripe from their triangular prickly envelopes, and which have a flavour very similar to that of the almond. To a large number of animals these nuts afford a good store of food. The thrush, blackbird, and many another gladsome songster delight in them, as do the partridge and pheasant; and the little dormouse makes his autumn meal on the mast, and sinks to sleep till the next spring leaves are coming. As to the squirrel, he sits among the boughs, and takes his meal of them, scatters numbers in waste, or carries them with him to some neighbouring tree:—

> "The sun is higher in the morning sky,
> His beams embrace the mossy-trunked trees,
> Yonder the squirrel, on the elm so high,
> Frisketh about in the cool morning breeze;
> Down peeps his diamond eyes—amazed he sees
> A stranger in his solitary home:
> And now he hides beneath the oaken-trees,
> And now he forth upon a branch will come,
> To crack his Beechen nuts, and watch me as I roam."

An old herbalist said, "The nuts do much nourish such beasts as feed thereon;" and the deer search for them beneath the trees, while country people, in the neighbourhoods of Beech-woods, send the swine to feed on the

mast. The nuts are very oily, and in France an oil, scarcely inferior to that of the olive, is expressed from them, and forms a very important article of domestic use, being fitted both for cookery and for burning in lamps. In some French provinces the mast (*La Faine* of the French) is roasted for coffee. Du Hamel says that the forests of Eu and of Crécy, in the department of the Oise, have yielded in a single season more than two million bushels of mast; and Michaux mentions that in 1770 the forests of Compiègne, near Verberie, furnished oil enough to supply the wants of the district for half a century. Beech-nuts are said to cause headache, if eaten in too great numbers.

Some of our best writers on forest trees consider the Beech as a tree which is not very picturesque; to us it seems beautiful. Its tall thick trunk, covered with smooth dark grey rind, its innumerable boughs, often bending downwards, and clad in summer with glossy green foliage, which in autumn is most richly tinted with russet yellow, render it attractive. Often innumerable stems arise from one root; and no tree has its tint of trunk and bough more varied by mosses, lichens, and handsome species of fungus. The youngling Beech keeps its shrivelled leaves through the winter; and the bole of the older tree often exhibits knobs about as large as a hazel-nut, which fall off at a blow.

We have, perhaps, no native tree which has so great a variety of uses as the Beech, though its wood is not well fitted for house or ship building. It is very useful, however, for keels of vessels, floodgates, piles, and other waterworks; and much household furniture is made of it, especially in continental countries—it being often stained to represent mahogany or ebony. Sabots are often cut of this wood, and the chips of Beech are much used in clarifying wine; while, in Scotland, the branches are valued for the pyroligneous acid which is procured from them. One interesting fact respecting this tree is, that to its German name, *Buche*, we owe our English word "book"—the sides of thick books having been made of beech-boards. The wood is said to make the very best oars for galleys; and, in France, small boats are formed of the hollowed trunk of this tree. In Germany, where wood is so much used for fires, a large amount of Beech is consumed as fuel. Beech-hedges, formed of several trees placed near together and kept cut, are also often to be seen in Beech countries.

Classic readers will readily recall references made by ancient poets to the "Beechen bowl;" and Milton, Cowley, and others of our English bards, allude to it. In the words of the latter:—

> "He sings the Bacchus, patron of the vine,
> The Beechen bowl foams with a flood of wine."

And, in another place, he says:—

> "If thou, without a sigh or golden wish,
> Canst look upon the Beechen bowl and dish;
> If in thy mind such power and greatness be,
> The Persian king's a slave compared with thee."

Beech-leaves make an excellent material for filling mattresses; and it is

to be regretted that they are not more generally used in country places by the poor, and that there are not more ladies like Miss Tyler, the aunt of Southey, who, he says, "effected a wholesome and curious innovation" in the poor-house, by persuading the managers to use beds stuffed with Beech-leaves. The practice of thus using them is very ancient, as the oft-quoted line of Juvenal testifies :—

"The wood an house, the leaves a bed."

Evelyn says, that being gathered about the fall, and somewhat before they are frostbitten, they "afford the best and easiest mattresses in the world to lay under our quilts, instead of straw; because, besides their tenderness and loose lying together, they continue sweet for seven or eight years, long before which time straw becomes musty and hard." He adds, "I have often lain upon them, to my great refreshment." Sir Thomas Dick Lauder, though used to the better beds of our times, still highly praises the Beech-leaf mattresses, as forming a most luxurious couch, having a fragrant odour like that of green tea.

Our old herbalists believed Beech-leaves to possess valuable medicinal properties. "They are," says an old writer, "cooling and binding, and therefore good to be applied to hot swellings to discuss them." He recommends a salve made of these leaves; and says, that the water found in the hollowed places in the Beech-trunk is very efficacious in complaints of the skin. The catkins, which fall from the tree in spring, are sometimes collected for filling pillows and cushions, and also for packing fruit. The smooth bark is frequently inscribed by the rustic lover now with the name of his mistress, as it was in the days of Virgil :—

"Or shall I rather the sad verse repeat,
Which on the Beech's bark I lately writ?"

A writer in an American journal stated, a few years since, that the Beech was a non-conductor of lightning. It is a well-known fact that the Indians, in the prospect of a thunderstorm, take refuge beneath its boughs. Dr. Beeton, in a letter to Dr. Mitchell, stated that the Beech-tree is never known to be struck by lightning, when other trees are shattered into splinters.

7. CHESTNUT (*Castánea*).

Spanish Chestnut or Sweet Chestnut (*C. vulgáris*).—Leaves oblong-lanceolate, tapering to a point, serrated, with a small spine on each serrature, smooth on both sides. In many woods of the south and south-west of England, magnificent Chestnut-trees are to be seen, apparently growing wild; and those who have spent their early days in their neighbourhood may, perhaps, recall with what glee they searched, in the month of October, for the fruits which fell from the boughs. The Chestnut-tree often adorns, too, the parks and pleasure-grounds of various parts of the kingdom; and though a naturalized and not a native plant, it was probably introduced here at a very early period by the Romans. They called the tree *Castánea*, from a town of Magnesia, in Thessaly, where it grew in great abundance, and from which place they are believed to have obtained it. The fruit was also by

1 COMMON BEECH
Fagus sylvatica.

2 SPANISH CHESTNUT
Castanea vulgaris.

Pl. 211.

early writers called the Sardian Nut, and afterwards Jupiter's Nut, and Husked Nut, which last name refers to the husk inclosing it.

The Chestnut is a stately and beautiful tree, rivalling the oak in size and length of years, though never quite so lofty or with such wide-spreading boughs as that monarch of the woods. Its tall trunk is like a column, and the bark is rifted and rent into innumerable clefts. The leaves are, during the month of June, of a most beautiful glossy green, of a lighter colour beneath, and edged with sharp spinous serratures. They are very handsome in their verdant mass, and very elegant, too, is each leaf—often half a foot long, sometimes twice that length, and three or four inches broad, marked with strong veins, and of thin and flexible texture. Long after many trees have dropped their foliage, the Chestnut has its boughs well covered with a rich golden leafage, and is as beautiful as in the full rich green of spring. From May to July, long and graceful spikes of greenish-yellow flowers are to be seen hanging among the leaves, and looking almost like uncurled tendrils. The barren flowers at the upper part of this spike are somewhat drooping, and have spreading stamens; they soon wither and fall off. The fertile flowers are fewer and grow on stalks, which finally lengthen as they support the fruit.

Some of the oldest Chestnut-trees of this country stood, probably, in youthful vigour, nearly a thousand years ago, and are yet undecayed; and many an avenue, planted centuries since, reminds us of the trees of Weston Underwood, which Cowper so prized:—

> "Not distant far a length of colonnade
> Invites us; monument of ancient taste
> Now scorn'd, but worthy of a better fate;
> Our fathers knew the value of a screen
> From sultry suns; and in these shaded walks,
> And long protracted bowers, enjoyed at noon
> The gloom and coolness of declining day.
> Thanks to Benevolus, he spares me yet
> These Chestnuts ranged in corresponding lines,
> And though himself so polished, still reprieves
> The obsolete prolixity of shade."

The oldest Chestnut, and, with the exception of some yews, perhaps the oldest tree in the kingdom, is the well-known tree which, as early as the time of King John, was known as the Great Chestnut of Tortworth. It is supposed to have been 300 years old in the days of that monarch, and it stands yet in picturesque grandeur, covered at its season with graceful leaves. Many a solitary wanderer has sat beneath its shadow, musing on its past history and future length of days, as many a one sits yet, knowing that when he is laid in his last resting-place, the wind will still stir its branches and the April shower patter on its leaves. It was formerly much compressed by the wall of the garden on which it stood; but the late Earl Ducie, in whose grounds it stood, removed this, and placed fresh soil about its base; and the old tree re-awakened to a more vigorous life. At a height of five feet above the ground the diameter of its trunk was then twelve feet, and its circumference fifty-two feet; yet this must have appeared a mere sapling when compared with one which grew not many years since on the slope of Mount

Etna. This, we are told, had a circumference of 204 feet, and had foolishly been hollowed out to form a house.

Trees nearly as old as that of Tortworth are scattered up and down the kingdom. Some very magnificent ones are in Kensington Gardens and Greenwich Park; those in the latter place were planted by Evelyn. He remarks: "The Chestnut is, next to the oak, one of the most sought after by the carpenter and joiner. It hath formerly built a good part of our ancient houses in the City of London, as does yet appear. I had once a very large barn framed of this timber." It was generally believed, until recently, that the roof of Westminster Hall, as well as that of several cathedrals in France, was made of Chestnut timber. Hence Bishop Mant says—

> "Whence a rich store our fathers drew
> The spacious barn to raise, or crown
> In castled fort or tower'd town,
> With open-rafted roof, the wall
> Of hallow'd church or scutcheon'd hall;
> Hence London saw, of antique guise,
> His framed and panell'd dwellings rise;
> Stage above stage projecting more
> And more, each fresh successive floor,—
> Hence thou beheld'st thy palace rear
> Its hall, Imperial Westminster."

It is not, however, now believed that the Chestnut was used so extensively in building as was formerly thought; and it has been fully shown, that neither the timber of Westminster Hall, nor of John Evelyn's barn, was of Chestnut—they being found to be of Durmast Oak (*Quercus sessiliflora*). Chestnut timber does not prove valuable for buildings, having a liability to crack, and to be much injured by time. But for many purposes, as for hop-poles and vine-props, it is of great service; and one of its uses is indicated by the poet:—

> "With close-grained chestnut-wood of sovereign use,
> For casking up the grape's most powerful juice."

It is also made into water-pipes; and its bark is valued by the tanner.

The leaves of the Chestnut have been used, like those of the beech, for filling beds; but Evelyn remarks that they make a crackling noise when the sleeper moves. Both in this country and in France they are used as a litter for cattle. Chestnuts, roasted or boiled, may often be seen at our tables, as Milton describes:—

> "While hisses on my hearth the pulpy pear,
> And blackening chestnuts start and crackle there."

And the crackling sound is well known to children, who gather around the Christmas hearth to roast these fruits. Some of those chestnuts in common use are gathered from native trees; but the superior fruits of the trees in Spain are largely imported hither. Evelyn regretted that chestnuts were not more eaten in this country; as, in some parts of the Continent, the trees are planted entirely for this produce, where they constitute a large proportion

of the popular food. He says: "We give that food to our swine in England which is amongst the delicacies of princes in other countries; and being a large nut, is a lusty and masculine food for rusticks at all times, and of better nourishment for husbandmen than cold and rusty bacon, yea, and beans to boot; instead of which they boil them, in Italy, with their bacon; and, in Virgil's time, they ate them with milk or cheese. The bread made of the flour is exceedingly nutritive; it is a robust food, and makes women well-complexioned, as I have read in a good author. They also make fritters with chestnut-flour, which they wet with rose-water, and sprinkle with grated parmigiano, and so fry them in fresh butter for a delicate. How we use chestnuts in stewed meats and beatille pies, our French cooks teach us; and this is, in truth, their very best use, and commendable." The old French writers, though considering this fruit as well suited to the robust and active, yet object to it, with good reason, for those whose lives are sedentary, as being difficult of digestion. They recommend its external application, in the form of cataplasms, for a variety of disorders. Our own authors said that, if eaten overmuch, these nuts "made the blood thick, and caused headache." One of them remarks: "If you dry chestnuts—only the kernels, I mean, both the barks being taken away—beat them into powder, and make the powder up into an electuary with honey; so have you an admirable remedy for the cough and spitting of blood."

Martial said, many centuries ago,—

> "For chestnuts roasted by a gentle heat,
> No city can the learned Naples beat:"

and the chestnut is yet roasted daily there, as well as in many other parts of Italy. In the South of France, too, they form the common vegetable food of the peasantry, and are a substitute for the bread and potatoes of the British meal. The planting of trees, and the gathering and preparing chestnuts for use, form the livelihood of large numbers of people; and the fruits are preserved by drying either in sand or in a kiln. They are, when ground to powder, mixed with milk and salt, and made into cakes or a kind of porridge. In France they are usually prepared by boiling, and flavoured with seasoning herbs, or they are roasted. Sugar and starch have been procured from them; and they have been, after roasting, put into beer instead of malt.

While hanging on the tree, the nuts are covered with the enlarged outer skin of the ovary, which is thickly beset with prickles.

Several places in this kingdom seem to have derived their names from the growth of these trees, as Norwood Chesteney, in the parish of Milton in Kent, and Chestnut Hill, near it. "In Hertfordshire," says Sir Thomas Dick Lauder, "is a town called, in old writings, Cheston, Cheshunte, Shesterhunte, Cestrehunte; and Philpot, who wrote in 1659, says—'There is a manor called Northwood Chestenus, which name complies with the situation; for it stands in a wood where Chestnut-trees formerly grew in great abundance.'" The French call the tree *Châtaignier;* the Germans, *Kastanienbaum;* the Dutch, *Kastanjeboom;* the Italians, *Castagno;* and the Russians, *Keschtan.* The word rendered by our translators of the Scripture by Chestnut, is

believed to have signified the Plane-tree, so abundant in Palestine and the other lands of Scripture.

8. British Oak (*Quércus*).

Common Oak (*Q. robur*).—Leaves oblong, usually on short stalks, deeply cut at the edges with blunt lobes; acorns generally single, in twos or threes; fruit-stalks long, and of reddish green, but in intermediate varieties short or almost wanting; buds small and not prominent; branches tortuous and spreading. A form of Oak sometimes regarded as distinct, but now very generally considered as a variety, is termed either the Bay, Chestnut, Red, or Durmast Oak. Its acorns usually grow in clusters on very short stalks. The leaves are glossy and shining, broader, rounder, and less deeply cut than those of the Common Oak; their footstalks very long and of a yellowish-green colour; the buds large and prominent; the branches more upright. We have often thought, as we looked upon the Oak, that neither botanist nor poet has ever better described it than does Shakspere, who calls it—

"The unwedgeable and gnarled oak."

The Oak puts forth its foliage of tender green, sometimes tinged with crimson, in April and May; at which season the long, loose pendulous green catkins are also to be seen. In winter the leaves have a reddish-brown tint, though the younger Oaks wear, sometimes even in the dreariest season, a branch of golden foliage. Far away in the woodlands, too, we may see them contrasting with the other trees, by the large mass of withered leaves which the rough winds yet leave to them. The leaves of the Oak grow in tufts, and are unlike in form to those of any other native tree. It often puts forth shoots in autumn; and instances are on record of a yet later growth of new leaves.

As we gaze on its massive base and ponderous trunk, or its knotty, wide-spread branches, covered with their umbrageous leafage, we instinctively recognise it as the monarch of the vegetable kingdom. We feel, too, that it is a peculiarly British tree; and the thought is awakened of the "walls of Old England," and the "hearts of oak" that have beaten bravely within them. Many a fact of English history is associated with the tree. The mind reverts to the Druids, who took their name from the Celtic *derw* (Oak), and who wore its wreaths of leaves around their brow; to the round oak-table of Prince Arthur; to the arrow of Walter Tyrrel, which struck against its stout trunk, on its way to the heart of the Second William; to the king who took shelter beneath its boughs; or to the brave William Wallace, who slept nightly in the hollow of the Oak of Torwood. Parliaments have held council beneath its shadow; and often has a sight of the tree served to recall the old idea of the Greeks, that it was an emblem of hospitality; or the fancy of the Arcadians, that it was the first-created of trees. Its old name, too, the "Father of ships," is felt to be an appropriate one. Its timbers have borne on the ocean the brave and the free, have brought us the wealth of other climes, have carried liberty to the captive, and taken the blessings of Gospel light to those who sat in darkness. The child frolics beneath its shadow, or the weary man buries his dead under it, and knows

1 COMMON BRITISH OAK.
Quercus robur.

2 HAZEL NUT.
Corylus avellana.

3 HORNBEAM.
Carpinus betulus.

it henceforth as the "Oak of weeping." The house which is his home, the church in which he worships his God, owe much to its compact, sturdy wood; and the boughs which shelter his cattle bear, too, the acorns which shall spring up to serve his successors. Bernard Barton expressed the feelings of many, when he wrote —

"Its stem, though rough, is stout and strong,
Its giant branches throw
Their arms in shady blessings round,
O'er man and beast below.

"Its leaf, though late in spring it shares
The zephyr's gentle sigh,
As late and long in autumn wears
A deeper, richer dye.

"Type of an honest English heart,
It opens not at breath;
But having open'd, plays its part,
Until it sinks in death.

"Not early one, by gleam of sun,
Its beauties to unfold,
One of the last, in skies o'ercast,
To lose its faithful hold.

"On earth the forest's honour'd king,
Man's castle on the sea:
Who will, another tree may sing,—
Old England's Oak for me."

To see fully the characteristic and picturesque beauty of the Oak, we should gaze on one which grows singly, and not on that surrounded by a group. It has in its solitary state more crooked branches, and altogether a more gnarled appearance. The branches of the Oak often spread out to an extent which forms a head broader than the height of the tree. The colour of its bark is pale grey; but one hardly sees its bark, amid that mass of grey and yellow lichens which encrust it, mingling with the emerald mosses which, especially at its base, form a smooth and verdant cushion, while brown and green mosses gather on every bough. Whether its twisted irregular boughs, always spreading horizontally, are clad with the bright green of spring, or the golden hue of autumn, its tint is ever rich, and its majestic form is far more varied in outline than elm or ash, or tall poplar, or drooping birch, or silvery willow. Not even the most casual observer can confound the Oak with any other tree; nor is there any other British tree which casts so broad a shadow. The Oak may be said to be, generally, from sixty to eighty feet in height; but, in some rare instances, it attains to that of a hundred feet. It always grows slowly; and, after it has lived for a century, makes little increase of size for many years; but it becomes more picturesque in age than in youth; and even when the passing away of centuries has left it nothing but a leafless, branchless trunk, it looks as if it would yet outlive many generations of men. It is protected from the action of storms by the form of its trunk, which is larger just above the earth than at a few feet higher, as well as by the underground roots, which bear twisting branches beneath the soil, much like those on which the sunbeams gleam so gladly, and on which the birds sit to sing.

Although the Oak is decidedly an indigenous tree, and a flourishing one too, yet it is somewhat sparing of its fruit; nor is it at all certain, at any season, that a most thriving Oak will bear acorns, or that, if they appear, they will be at all numerous. Little do we in this day realize the immense importance which these acorns bore in other years. Old writers called this fruit *accorne*, or, as Turner wrote it, *eykorne*; that is, says this herbalist, "ye

corne, or fruit of an eike"—corn and kernel being common names for seeds. In the Anglo-Latin Dictionary, the "Promptorium," we find *ocorn*, and also *accorne*, or *archarde*, "fruite of the oke, glans." Mr. Albert Way, quoting from a MS. in the possession of Sir Thomas Phillips, says, "In the curious inventory of the effects of Sir Simon Burley, who was beheaded in 1388, are enumerated 'deux paires des paternostres de aumbre blanc, l'un contrefait des atchernes, l'autre rounde.'" Chaucer, also, tells of some who were "wonte lightlie to slaken hir hunger at even, with akehornes of okes."

Whether the ancient Britons ever fed upon acorns may be doubted; nor would it be easy to prove that their swine ate them; but when the Saxons swayed this kingdom, they, who had come from the vast Oak forests of Germany, knew well the worth of this "fruite of the oke." Swine's flesh has been generally the principal animal food of nations in the earlier stages of civilization; and the Saxon swineherd was a very useful member of the community. In times when swine were fattened in the forest by the acorns which strewed the ground, these forests became so important, that King Ina, in the close of the seventh century, enacted, for their preservation, the Pannage Laws, which regulated the right of feeding swine in the woods. The fruit of the Oak was then deemed a fitting gift for a king to receive, and the right of pannage formed part of the dowry of the daughters of Saxon kings: while a failure of these fruits would have proved a grand cause of famine. The anger felt by the people when the Norman Conqueror turned the forest into the hunting-ground, was greatly caused by the loss of the food for swine afforded by the Oak-trees; and so bitter was the feeling engendered by the grievance, that the old historians seem to have great satisfaction in recording the retributive justice to the king, by which the New Forest proved fatal to more than one of his family. This destruction of the food for swine was one of the wrongs for which, in the latter days of King John, the voice of the nation loudly demanded redress. Even till within the last few years, the New Forest furnished food for large numbers of swine; and the swineherd might be seen plying his ancient vocation beneath the Hampshire Oaks—those Oaks of which the people of that county are said to be so proud. Long after wheat, oats, and rye were waving their green blades or ripened grain over the fields of Britain, and in some measure rendered the acorns of less importance, considerable value was still attached to these fruits by the nation. In the Saxon Chronicle, the year 1116 is described as a very "heavy-timed, vexatious, and destructive year"; and the failure of the acorns in that season is particularly mentioned. "This year also was so deficient in mast (acorns), that there never was heard such in all this land or in Wales." The acorns to which the classic authors refer, as causing the fatness of the primitive people of Greece, were the edible fruits of other trees, as the *Q. ballóta*, the *Q. ilex*, and particularly the *Q. æsculus* —the fruits of the latter being still as much eaten in Syria as chestnuts are in other countries.

From Britain's early days the timber of the Oak was used for various purposes, and Alfred's navy, which fought with the sea-kings, went forth in ships built, doubtless, of their native Oak; while the conjecture is probable that the boats which composed the fleet of Edgar were framed of this wood.

The timber found in our oldest buildings is of Oak. The door of the inner chapel of Westminster Abbey, and the shrine of Edward the Confessor, are of Oak; and one of those coronation-chairs, yet so interesting to visitors of the Abbey, and made of Oak, has been there between five and six hundred years; while the round Oak-table of Prince Arthur, in Winchester Castle, yet remains to tell of the durability of this wood. Professor Burnet remarks, that the great number of Oak forests formerly in England is shown by the names of several places: "For one Ashford, Beech-hill, Elm-hurst, or Poplar, we find a host of Oaks—Oakleys, Actons, Acklands, Akenhams, Acringtons, and so forth. The Saxon *ac, aec, aac,* and the later *ok, okes, oak,* have been most curiously and variously corrupted. Thus, we find *ac, aec,* degenerating into *ak, aike, acks,* when *ax, exe,* were often also aspirated into *hac, haec,* and *hacks.* In like manner, we have *oak, oke, ok, oc, ock, oeck, ocke, oks, ocks, ockes,* running into *oax, ox, oxes,* for *ox, oxs,* with their further corruptions, *auck, uck, huck, hoke,* and *wok,* as a corruption of the last extreme." The town Oakingham is at this day called and spelt, indifferently, Oakingham, Okingham, or Wokingham. Oakesley, or Oxessey, are two common ways of writing the name of one identical place, and a parallel is found in the name of a Surrey hamlet, Okeshott or Oxshot.

The two kinds of Oak described at the head of this chapter have received much attention from our most eminent botanists, and there is reason to believe that more is yet to be learned respecting them. To the distinctive differences already given, we may add that the Common or White Oak assumes a rather set and unhealthy appearance; while the Durmast Oak is a healthy, robust-looking tree, and the medullary rays of its wood are thin, compared to the broad, large rays of the Common Oak. Some remarkable facts relating to the timber of both these Oaks were subjected to the investigation of the Royal Horticultural Society some years since, three subjects being offered for consideration. These were, that these Oaks may be distinguished by their timber as well as by other marks; that Durmast timber is, at least, as good as that of the Common Oak; and that the belief in its want of durability is altogether erroneous.

Professor Lindley, remarking on this subject, says: "The large size of the medullary rays is well known to afford the means of distinguishing the timber, so that a practised eye can hardly fail to recognise the one or the other, in cases where fair specimens can be examined. It is the large size of these processes which makes it so easy to rend the Common Oak, while the Durmast refuses to submit to the operation. When genuine Durmast is contrasted with genuine Common Oak, the distinctions are obvious; but in the opinion of all woodmen of experience, there are varieties, or, as some say, hybrids, of each, which partake of an intermediate character in the foliage and acorns, and which may therefore be supposed to offer an intermediate condition of the wood. Of this we have an example now before us, in a specimen from the county of Norfolk, which, because the acorns are on a very short stalk, has been supposed to be Durmast, although other circumstances show it to be merely a sessile-fruited variety of the Common Oak, the only species we ever saw in the eastern counties."

An experiment as to the value of Durmast was made some years since in

Portsmouth Dockyard, on timber taken out of the *Vindictive*, a ship into which some marked specimens had been purposely introduced. When tested as to strength, it was found that while Common Oak from the same ship broke, on an average, under a weight of 931 lbs., only bending 4¼ inches, the Durmast sustained, on an average, the weight of 1,032 lbs., and was bent 5⅝ inches before breaking. The experiment served to convince the dockyard authorities that they were wrong in rejecting the Durmast; and this Oak is now in great request in the New Forest. All writers admit that this grows faster than the Common Oak; but Professor Lindley observes that there is no reason for believing that timber of slow growth is invariably preferable to that which has grown more quickly.

For the purpose of showing that the prevailing belief of the want of durability in Durmast was a mistake, a number of specimens of the timber, still in good preservation, were exhibited to the Society. "The durability of the Common Oak," says Professor Lindley, "hardly requires proof: it was nevertheless illustrated by pieces of timber taken out of Windsor Castle when under repairs, and by portions of an ancient canoe, or coracle, which had been discovered about ten feet deep, at the bottom of the 'slopes' of Windsor Castle, by some workmen employed in digging a foundation for a bridge; with it were found deer's horns, hazel-nuts, etc. The age of this relic, although unascertainable, must be very great, inasmuch as it was probably left where it was found at some period when the Thames, or a branch of it, reached the foot of the slopes—a time, no doubt, far more remote than when 'Cowy stakes' were driven into the bed of the Thames." Other specimens of old Oak were also exhibited. Among the specimens of ancient Durmast compared with these, were the following interesting relics: Some timber from Glasgow Cathedral; part of a beam from West Boldon Church, in Durham, of A.D. 1300; pieces of the roof of Westminster Hall; part of the timber of the Hospitium of St. Mary's Abbey, York, of about A.D. 1400.; a portion of a Saxon log-coffin—this and several other similar coffins having been found in excavating for new houses in Parliament Street, York; and from the same city was sent part of a huge boss from the centre of the roof of the choir of York Minster, built at the close of the fourteenth century, and rescued from the fire in 1829. This half-burnt timber was in as sound a state as when introduced into the building, as was also that of a beam from Heslington Hall, which was built in the reign of Queen Elizabeth.

There is no doubt from these proofs that the Durmast timber is as durable as that of the Common Oak. Professor Lindley adds: "There, however, still remains the unanswered question—viz., How far the quality of the Oak timber, of either one species or the other, is dependent upon soil or climate. It is certain that the Scotch foresters condemn the modern Durmast, as they find it with them; it is equally certain that the woodmen of Dean Forest and the New Forest hold an opposite opinion. It is possible that the Durmast, which is the common French species, requires a better climate than that of Scotland."

Many venerable Oak-trees yet stand in strength and beauty in various parts of the land. The Leaden Oak, in Ampthill Park, was, even in the time of Cromwell, thought too old for naval timber, and had, in a survey

made at that period, a piece of lead nailed to it to indicate this opinion. Our limits will scarcely allow of more than a reference to the large Oak of Wootton, in Buckinghamshire—that most magnificent of trees, whose great branches cover an area of 150 feet in diameter; to the Chenies Oak, older than the Norman Conquest; to the grand old Combermere Oaks, near Nantwich, or those venerable trees which have for centuries borne the blasts which rush over bleak Dartmoor. The noble old Fairlop Oak, spreading over a space whose diameter is 300 feet; Sir Philip Sidney's Oak at Penshurst; Pope's Oak in Windsor Forest; the grand Cowthorpe Oak, with its trunk sixty feet in circumference, and its boughs spreading over an area of half an acre, and many another tree, have all served as themes to painters, engravers, historians, poets, and lovers of Nature; and the Oak at Yardley Chase, which is said to be as old as the period of the Conqueror, suggested to Cowper such thoughts as might have been suggested by many an aged compeer:—

"Survivor sole, and hardly such, of all
That once lived here, thy brethren; at my birth,
(Since which I number threescore winters past,)
A shatter'd veteran, hollow-trunk'd perhaps,
As now, and with excoriate forks deform;
Relic of ages! could a mind, imbued
With truth from Heaven, created things adore,
I might with reverence kneel and worship thee.

"Thou wast a bauble once, a cup and ball
Which babes might play with: and the thievish jay,
Seeking his food, with ease might have purloin'd
The auburn nut that held thee, swallowing down
Thy yet close-folded latitude of boughs,
And all thine embryo vastness at a gulp.

"Who lived when thou wast such? Oh, couldst thou speak,
As in Dodona once thy kindred trees
Oracular! I would not, curious, ask
The future, best unknown, but at thy mouth,
Inquisitive, the less ambiguous past."

Various kinds of gall are found on the Oak, and are caused by several species of *Cynips*. These insects puncture the leaf bud, or stem, in order to place their eggs within its substance; and introducing at the same time a liquid which is noxious to the vegetable, and disturbs its circulation, originate spongy, shining, or woolly excrescences. Sometimes the bud is thus transformed into a hoplike object; sometimes little glossy round balls, or flat circular red patches, stud the leaves; clusters of strange-looking objects, resembling barnacles, appear on the bark; or the brown spongy oak-apples, like balls of leather, stand upon the boughs. Those long-celebrated Bitter Apples of Sodom, which look beautiful in their violet tint but turn to dust when crushed, are now found to be galls growing on the dwarf Oaks of different countries. Josephus, as well as other ancient writers, refers to them; and most, from their very childhood, have learned to listen with wonder to the accounts of—

"Those Dead Sea fruits which please the eye,
And turn to ashes on the lips."

It is not many years since the Oaks in the west of England were found

to be infested to an alarming extent by a species of *Cynips*, which appears to have been previously unnoticed. Instead of attacking the leaves or flower-stalks, as is the habit of most other species of gall-fly, it lays its eggs in the young twigs; and the consequence is, that when the leaves have fallen, the tree is found to be laden with globular galls, each about the size of a cherry, some single, but more frequently in clusters. When the grubs which they contain have reached maturity, they eat their way out, leaving the bald bullet-galls on the twigs; so that, all the winter, the Oak simulates a fruit-tree, bearing a crop, however, most pernicious to itself, as the extremities of all the twigs are found to have perished from exhaustion. Experiments have been tried to discover whether the galls can be applied with profit to manufacturing purposes.

M. Duplat, a chemist attached to a military hospital, has lately succeeded in procuring oil, and producing alcohol by distillation, from acorns growing in the Oak-forests which cover Mount Atlas. Both the oil and alcohol have been found to be perfectly suited for chemical purposes.

9. HAZEL (*Córylus*).

Common Hazel (*C. avellána*).—Leaves roundish, heart-shaped, pointed, downy beneath; stipules oblong, blunt; involucre of the fruit bell-shaped, torn at the margin. What English reader, country born and country reared, is not familiar with the Hazel-tree—the tree whose pale, greenish yellow catkins (Lambs'-tails as we called them) hung among the nosegays of blue-bells and primroses, gathered in the spring of life and the spring-time of the year? Earlier still in the season, and while the frosts of January were sparkling on the hedges, we have found the little crimson clusters of brilliant stigmas in the scaly buds of the pistil-bearing flowers rewarding our search, and unrivalled in brightness by any surrounding object, save where, on some fallen bough, the fungus-cups were clustering, rich in their lining of scarlet or crimson. In spring-time how many have found, like Clare—

> "Dead leaves of Oak and Hazel-tree,
> The constant covering of all woody land;
> With tiny violets creeping plenteously,
> That one by one enticed the patient hand!"

But it is not alone in spring that the Hazel-tree has its store of pleasures. Well do the frisking squirrel and the creeping cheerful nut-hatch prize the fruits of the Hazel—fruits which well deserve a place at the dessert, though the cultivated filberts or the nuts of Spain are oftener seen there! Our Hazel-nut was called by the Anglo-Saxons *haselnutu*—from *hasel*, a cup, and *knutu*, a nut. In later days nuts were spelt, as Chaucer wrote them, "notes;" and a prescription, written before our earliest bard had traced a line, gives the same orthography. For a cold in the head, the patient was directed—"Take small note kenneyls, and roost hem, and ete hem with a lytyl powder of pepyr when thou gost to bed." Culpepper, who refers to the use of nuts as a remedy for colds, quaintly says: "Why should the vulgar so familiarly affirm that eating nuts causes shortness of breath, than which nothing is falser? For how can that which strengthens the lungs

cause shortness of breath? I confess the opinion is far older than I am; I knew tradition was a friend to error before, but never that he was the father of slander: Or are men's tongues so given to slandering one another, that they must slander nuts too, to keep their tongues in use?" He adds: "And so thus I have made an apology for nuts, which cannot speak for themselves." Besides being used medicinally, chocolate, and even bread, have been made of nuts; and they were prized in former times for the oil which they yielded, the Hazel being cultivated for this produce.

The pale-green catkins shed their pollen and fall, but the red stigmas ripen into fruits; and clustering nuts, embrowned by Autumn's touch, have welcomed thousands, who, like Wordsworth, have gone forth with bounding spirits to seek them.

"Among the woods,
And o'er the pathless rocks, I forced my way
Until, at length, I came to one dear nook
Unvisited, where not a broken bough
Droop'd with its wither'd leaves, ungracious sign
Of devastation, but the Hazels rose
Tall and erect, with milk-white clusters hung,
A virgin scene! A little while I stood,
Breathing with such suppression of the heart
As joy delights in; and, with wise restraint
Voluptuous, fearless of a rival, eyed
The banquet.
Then up I rose
And dragg'd to earth both branch and bough, with crash
And merciless ravage; and the shady nook
Of Hazels, and the green and mossy bower,
Deform'd and sullied, patiently gave up
Their quiet being: and unless I now
Confound my present feelings with the past,
Even then, when from the bower I turn'd away
Exulting, rich beyond the wealth of kings,
I felt a sense of pain when I beheld
The silent trees and the intruding sky."

Mr. T. Hudson Turner quotes a M.S., written apparently by Sir Walter de Henlée, "chevalier," in the early part of the fourteenth century, which states that one quarter of nuts ought to yield four gallons of oil; but the particular sort of nut is not specified. But though the Hazel may have been early cultivated here, the tree is undoubtedly indigenous, and the nuts are often found in the bogs of this kingdom. Mr. Hugh Miller describes some of the bogs about Cromarty, thickset with silvery willows, while they are full of the remains of enormous oaks and elms, now black as the coal itself. Here, this writer tells us, he found handfuls of Hazel-nuts of the ordinary size, but black as jet, with the cups of acorns and twigs of birch—the latter still retaining almost unchanged its silvery crust, while its woody interior had become a mere pulp. "I have even," he says, "laid open in layers of a sort of unctuous clay, resembling fuller's-earth, leaves of oak, birch and Hazel, which had fluttered in the winds thousands of years before."

We have begun our account of the Hazel with that of its nut, for this has peculiar claims on our notice, because it is one of the few British fruits which are really worth eating:—sloes, blackberries, service-berries, wild cherries, and crab-apples being pleasing only to childhood's taste, though wild raspberries and strawberries are sweeter even than cultivated ones.

But besides yielding its store of nuts, the Hazel has many other uses; and its undergrowth of wood is so serviceable that it might have suggested the old saying, "An acre of coppice-wood is as good as an acre of wheat-land, if not better." Though the wood of the tree is never large enough to afford timber for building, yet it is used in cabinet-making, and for a variety of small and delicate articles of manufacture; while its exceedingly tough and flexible shoots serve for hoops, crates, hurdles, walking-sticks, fishing-rods, rustic baskets, and fences. In the Vale of Derwent, Hazels are grown especially for the uses of the root-shoots; and the roots of the tree, when large, afford curiously-veined pieces, used in veneering and for small articles of domestic use; and many a country oven is heated with the fagot of Hazel-wood.

That interesting and venerable church, one of the first reared in this land, the church belonging to the Abbey of Glastonbury, is believed to have had the walls of its earliest building made of Hazel-boughs interwoven among stakes; and walls of this kind, plastered over with mortar, are yet in use for outhouses in country places. Some religious associations appear, too, to have been connected with the Hazel-wood; and it is supposed by antiquaries to have formed, like the scallop-shell, a token of certain pilgrimages. In several places staves of the Hazel have been found in the graves of ecclesiastics. A writer in the *Archæological Journal* states that, when the tomb of Richard, Bishop of Chichester, was restored, and the effigy and stone table removed, the grave of stone courses beneath was found in perfect repair, but the earth which covered the remains had sunk to the depth of several inches. On the surface lay several fragments of Hazel-wands, probably such as pilgrims had cut down by the way, and which they suspended at the shrine as devout offerings. This Bishop died between the years 1245 and 1253. Similar Hazel-branches have been found in Hereford Cathedral; and such a Hazel-wand, roughly trimmed as if cut by the wayside, lay in the tomb of Richard Mayo, Bishop of Hereford, with several sea-shells—tokens, it is supposed, of a pilgrimage to the shrine of St. James. This was probably made when that prelate was sent to escort Catharine of Aragon, the affianced bride of Prince Arthur, on her arrival in England. The use of the forked Hazel-twig as a divining-rod, to indicate the place where metal lies beneath the surface of the earth, is yet frequent in mining districts. It is said to have been thus employed in this kingdom as early as the days of Agricola, and is probably the remains of a custom used in still older periods, when the Prophet Hosea declared of the ancient Israelites, "My people ask counsel at their stocks, and their staff declareth unto them." As Evelyn said, "It is certainly next to a miracle, and requires a strong faith;" but even in recent days, mines have been sunk in Cornwall, under the belief that the presence of metal is indicated by the bending of the Hazel-twig.

The tint of the foliage of the Hazel-tree is a somewhat sober green; and it never wears the light hue of the oak or beech, though the young leaves at the top of the twigs, and sometimes also the larger leaves, are often purplish-red. The leaves are stalked, rough, strongly veined, and have, when young, oblong stipules at their base; the bark on the trunk is ash-coloured, and on the branches light brown, spotted with white. The Hazel, when allowed to

reach the dimensions of a tree, attains a height of about twenty feet. Leyden, in his verses on Spring, says:—

"I see the Hazel's rough-notch'd leaves,
Each morning wide and wider spread,
While every sigh that zephyr leaves
Sprinkles the dewdrops round my head.

"The yellow moss in scaly rings
Creeps round the hawthorn's prickly bough;
The speckled linnet pecks and sings,
While snowy blossoms round me bow.

"The gales sing softly through the trees,
When boughs in green waves heave and swell;
The azure violet scents the breeze,
Which shakes the yellow crowfoot's bell."

And the Hazel is a continual subject of allusion among the troubadours and old French poets.

This tree retains its leaves till the first severe frosts; and they are in autumn of a russet brown, which finally changes to a rich yellow tint. The branches being picturesque, the tree is used in France for arbours and walks. It is said by the growers to thrive best in Hazel-mould—that is, a mould of a reddish-brown hue; but it will flourish on any soil that is not too moist. Many Old-English names of places and persons are derived from this plant, as Haslemere and Hazelbury. It grows sometimes in the North at a great elevation, and it is a tree of all the temperate climates of Europe and Asia. The French call it *Coudrier;* the Germans, *Haselstrauch;* and the Italians, *Avellano* and *Nocciola.*

The two varieties of the Hazel which are most commonly cultivated for the nuts are the Cob and Filbert trees. The latter differ from the ordinary form of the tree in the larger nuts with their handsomer green coverings. They are grown plentifully in Kent, especially in the neighbourhood of Maidstone.

10. Hornbeam (*Cárpinus*).

Common Hornbeam (*C. bétulus*).—Leaves egg-shaped, acute, sharply and doubly serrated, plaited when young; scales of the fruit 3-parted. The Hornbeam is a common tree of poor damp soils in several parts of England, forming a chief portion of some of the old forests about London, as of that of Epping. Gerarde, who speaks of it as growing in his time very plentifully in Northamptonshire, and about Gravesend in Kent, thus describes it:—"It grows great and very like unto the elme or witch hasell-tree, having a great body, the wood or timber whereof is better for arrows and shafts, pulleys for mills, and such like devices, than elm or witch hasell; for in time it waxeth so hard that the toughness and hardness of it may be rather compared unto horn than unto wood; and, therefore, it was called Hornebeam, or hard-beame. The leaves of it are like the elme, saving that they be tenderer; among these hang certaine triangled things, upon which are found knaps or little buds of the thickness of ciches (vetches), in which is contained the fruit or seede: the roote is strong and thicke."

Like most of the descriptions given by our old herbalists, this is sufficiently graphic; and the tree is doubtless often mistaken for the elm from the simi-

larity of its leaves, which, however, are smoother, and have transverse hairy ribs, and which are, in the early stage, very prettily folded into plaits. The Hornbeam may be occasionally seen fifty feet high; but it is usually a small and not a very ornamental tree. The trunk is slender, somewhat flattened, straight, and but little roughened, and the flowers appear among the foliage in May. The barren catkins are of a pale yellowish-green, lax and scaly, two or three inches long; and those which are fertile are much smaller, and are succeeded in due season by small angular nuts, each seated within a leafy cup. No other British catkins are like these; so that this tree is, during its flowering season, readily distinguished by them.

The Hornbeam was formerly sometimes called Horse-Beech; and it was once much in use for alcoves, labyrinths, and hedges, as it bears cutting exceedingly well. Indeed, the great excellency of the tree appears to be in its adaptation for hedges. Evelyn praises it with scarcely less enthusiasm than that with which he refers to his favourite holly-hedge; and says of the Hornbeam that it makes the "noblest and stateliest hedges for long walks in gardens and parks of any hedge whatsoever." The plant is much used in France for this purpose, and the hedges, called *Charmilles*, are greatly valued. On some spots of our own land, we might yet say with the poet:—

> "Here Hornbeam hedges regularly grow;
> Here hawthorn whitens and wild roses blow."

But the two latter plants are far more commonly to be seen in our hedgerows than the former.

The Hornbeam retains its leaves in winter. Its wood is white, tough, and close-grained, but will not take a good polish. It is adapted, however, especially when young, for many country uses, and is of service to the carpenter and wheelwright, and the very best of wood for fuel. A twig will burn like a candle, and continue burning for a long time; and in France the wood is much liked for the steady bright light which it diffuses in the apartment. Its charcoal is excellent; and the French use the dried foliage for fodder. The tree is called in French *Le Charme;* the Germans call it *Die Hagebuche.* Its catkins are said to be sometimes fraudulently mingled with hops.

Order LXXXI. CONIFERÆ—FIR TRIBE.

Stamens and pistils on separate flowers, and, in some cases, on different trees; stamens arranged in sets around a common stalk; fertile flowers usually in cones, sometimes solitary, destitute of styles or stigmas; fruit either a seed seated in a fleshy covering, or a cone composed of hardened scales or bracts, bearing at the base of each naked seeds, which are often winged; leaves rigid.

1. FIR (*Pinus*).—Barren flowers in clustered spirally-arranged scaly catkins, the upper scales bearing sessile anthers; fertile flowers in an egg-shaped catkin, which finally becomes a woody cone; seeds winged. Name, the Latin name of the tree.

2. JUNIPER (*Juníperus*).—Barren flowers in smaller scaly catkins, anthers attached to the base of the scales; fertile flowers in small catkins of a few united scales, which finally become fleshy and form a berry, with three hard seeds. Name, the Latin name of the tree.

3. YEW (*Táxus*).—Barren flowers in oval catkins, scaly at the base; stamens numerous; fertile flowers solitary, with a few scales at the base; seed solitary, hard, contained in a fleshy cup. Name, from *toxon*, a bow, from the old use of its wood.

1. FIR (*Pínus*).

Scotch Fir (*P. sylvéstris*).—Leaves long, slender, and rigid, in pairs round the branch; young cones stalked, generally two together; wing thrice as long as the seed. Of the tall dark Firs and Pines which thicken in the vast forests of Northern Europe, one alone grows wild in Britain. This, the Scotch Fir, is, however, one of the most important and widely distributed of the European species, and one which furnishes several varieties of stately trees. In Wiltshire and some other parts of England, this Fir is to be found covering large tracts of land; and those who wander there might bethink them of the words of Coleridge:—

> "A rock, methought, fast by a grove of Firs,
> Whose thready leaves to the low-breathing gale
> Made a soft sound, most like the distant ocean."

These Firs were sown there by means of these murmuring gales, which waft the winged seeds around the spot; or were planted by the squirrel or bird, which eats its meal from the Fir-cone, and scatters some of the numerous seeds.

But it is not in England that we find the numerous Pine-forests, which form so characteristic a feature of Highland scenery, darkening the slopes and summits of mountains, swaying their boughs hither and thither, and uttering such sounds

> "As the rough winds of autumn make, when they
> Pass o'er the forest and bend down the Pines."

Amid their shadow, clumps of purple heather arise in beauty; and many a lovely flower and brilliant fungus, if not absolutely peculiar to the Pine-wood, yet especially loves its shelter; while a delicious and resinous fragrance reaches the sense, long ere the eye can discern their forms in the blue distance. And how well are the trees adapted to these their haunts! Their roots, running immediately under the surface, require but little depth of soil; their evergreen, rigid leaves are not easily torn by the bleak winds which sweep over the hill-tops, and are so slender that they will not long hold the mass of snow; while, by their resinous juices, they are protected from the rigour of the cold air. Nor do the Fir-forests present that uniformity of aspect which, it might be supposed, would be consequent on the little variety of the trees. Every visitor to the Highlands of Scotland is charmed by their beauty and magnificence. "Every movement we make," says Sir T. D. Lauder, "exposes to our view fresh objects of excitement, and discloses new scenes produced by the infinite variety of the surface. At one

time we find ourselves wandering along some natural level, under the deep and sublime shade of the heaving pine foliage, upheld high overhead by the tall and massive columnar stems, which appear to form an endless colonnade; the ground dry as a floor beneath our footsteps, the very sound of which is muffled by the thick deposition of decayed spines, with which the seasons of more than one century have strewed it; hardly conscious that the sun is up, save from the fragrant resinous odour which its influence is exhaling, and the continued hum of the clouds of insects that are dancing in its beams, over the tops of the trees."

This writer describes with graphic power the changes of scenery which ensue, when the ground swells into hillocks, and the vast continuity of shade is broken by the light which streams down on some single huge tree, and on the purple heath-bells and tufts of ferns; and how the silence is interrupted by the proud movements of the troops of red-deer, or by the roar of the cataract, whose white sheet of water dashes down the rock into some deep ravine, shaking the very tallest of the Pine-trees, and bidding them quiver, as by the touch of a giant hand.

Extensive tracts of Highland Pine-forests have been thinned by the hand of man; and in some places, where once the trees grew in masses, they are but few and scattered. Sometimes the Firs have been burned down in order to extirpate the wolves; sometimes because, in time of war, they afforded a hiding-place to the enemy; and many a lofty tree has been felled

"To be the mast of some great ammiral."

Hugh Miller, referring to the Forest of Corrybhalgan, says:—"It was but a shred of its former self, but the venerable trees still rose thick and tall in some of the more inaccessible hollows; and it was interesting to mark, when they encroached on the open waste, how thoroughly they lost the ordinary character of the Scotch Fir, and how, sending out their short gnarled boles and immense branches two or three feet over the soil, they somewhat resembled, in their squat dense proportions and rounded contours, gigantic beehives." In other spots, masses of mossy land were covered with short stumps of trees, mingled with noble Pines, which have risen or are rising up from the

"Fir-trees all around,
Aye dropping their hard fruit upon the ground."

The Scotch Fir is probably a native of England as well as of Scotland. Gerarde tells how the tree once grew in great plenty in Cheshire, Staffordshire, and Lancashire, "as is reported, before Noah's flood; but being overflowed and overwhelmed, they have been found since in the mossie and waterie moorish ground, very sound and fresh until this day, and so full of a resinous substance that they burne like a torch or linke, and the inhabitants of those countries doe call it Firre-woodde and Fire-woodde unto this day." The bogs of Ireland prove, too, that the Fir was once abundant in that country.

A well-grown Scotch Fir is a beautiful tree, with its reddish-brown trunk looking sometimes as if cut out of copper, and its spiry pyramidal head of foliage. It has a common variety in which the branches spread out horizon-

1. SCOTCH PINE
Pinus sylvestris.

2. JUNIPER
Juniperus communis.

3. YEW
Taxus baccata.

tally, or bend downwards, while the bark is of a more yellowish hue, and the foliage of a sea-green tint. The leaves of the Scotch Fir are in pairs all round the branches, and in young trees are sheathed at the base, and two or three inches long, being shorter in older trees. They are slightly convex beneath, their edges minutely notched, and at first they are glaucous on the lower side, but as they become older of a deeper green. The tree bears its flowers in April and May. The barren flowers are placed in whorls around the extremities of last year's shoots, and are laden with an abundance of pollen. The fertile catkins grow chiefly in pairs, towards the ends of the new shoots, and gradually harden into brown rugged cones, which taper at the point. In the autumn of the second year these burst open and discharge their seeds, which are small and furnished with a membranous wing. This Fir is often sixty to a hundred feet in height.

The Scotch Fir is a most valuable tree when it grows wild and on a congenial soil, furnishing either red or yellow deal. The trunk of Pine-trees is straighter than that of most others: hence, both in naval and civil architecture, its durable wood is used for many important purposes, and that of the Scotch Fir is prized beyond all others of the genus. The resinous juice, which either exudes naturally or may be procured by incision, is used in preparing tar, pitch, resin, and turpentine; and in the north of Europe, the outer bark of the tree is employed for covering and lining huts, while the inner bark, ground to powder, and in some cases mingled with flour, is made into a coarse black bread. Mr. Lang describes cakes made of these materials, and cooked in a frying-pan or on a griddle, as very good food. The leaves and branches of the tree serve as fodder for cattle and sheep during severe weather, Pine-chips are substituted for hops in brewing, and the young shoots of the tree are eaten with avidity by peasant-children. The log-houses of Northern Europe are made almost entirely of Scotch Fir; and in Russia roads are formed of its trunks, while the pine-torch is in common use in many parts of Europe. M. Lamartine, describing an excursion over the mountains in search of eagles, tells us how these torches are made. He says that having cut down some young Firs, they split the trunks lengthwise into little laths of wood, leaving the lower part uncut, so that it might form a handle by which to carry the torch. The bundle of laths was held together by bands of wire, which were placed at equal distances. They then dried them in an oven, after the bread had been removed. "Those little trees," says this writer, "thus prepared, calcined by the heat of the oven, and full of the natural resin of the Pine, constitute excellent torches, which burn slowly, which nothing can extinguish, and which, when lighted, give out a flame of dazzling brightness on being exposed to the slightest breeze."

A few years since, M. Panewitz succeeded in preparing, by chemical decomposition, from the leaves of the Scotch Fir, a hemp-like fibre called in Germany *Wald-wolle*, a word best rendered into English by Wood-wool. This substance is now extensively employed for filling pillows, cushions, and mattresses, or for the purposes of wadding. In the prairie of Humboldt, near Breslau in Silesia, are two remarkable establishments—one for the purpose of making the Pine-leaves into this cotton or wool, the other for affording baths to invalids, made of the water resulting from the fabrication

of this material, both being superintended by the inventor of the process. The leaves of Firs are usually composed of bundles of strong fibres, held together by a resinous substance, and those of the Scotch Fir are generally preferred, as being the longest; nor is the tree injured by stripping off the foliage, as if those leaves are left which grow at the extremities of the branches, the others are readily renewed, and the leaf-gathering gives employment to many among the poor. In 1842, the directors of the Hospital of Vienna adopted this wool instead of cotton wadding in quilted coverings. The aromatic odour which these diffused was found both agreeable and healthful, while it proved obnoxious to insects. Since this period the pine-wool, or wood-wool, has been used in various public institutions in Germany, as well as in cushions for railway carriages; and blankets, pasteboard, and various other articles are made of the fibre; while rheumatism, nervous affections, and several other maladies have been stated, on good authority, to be greatly benefited by the resinous water procured from it. A prize-medal was awarded at our Great Exhibition of 1851 for materials made from the Pine-needle-wool, prepared from the needles or leaves of the Pine-tree. The bark of the Scotch Fir has been also used in tanning.

Some legends doubtless were once in existence respecting the Fir, as one of the titles given in honour of the Virgin, in an old edition of Chaucer's "Ballad in Commendation of Our Lady," is "Benigne Braunchlet of the Pine-tree."

2. JUNIPER (*Juniperus*).

Common Juniper (*J. communis*).—Leaves 3 in a whorl, linear and spine-tipped; flowers small, in the axils of the leaves. On many a widely-stretching moorland we may descry the clumps of Juniper, with their greyish-green branches varying the tints of the landscape. The summer wind passes lightly over the shrub, bringing with it some faint tokens of its aroma, an aroma far more powerful if the plant is bruised; and the winter blasts rush over it, and the winter frosts congeal upon its branches, but it loses nothing of its freshness of tint. Mr. Matthew Arnold describes such a spot as that on which it sometimes grows:—

> "This cirque of open ground,
> So light and green: the heather, which all round
> Creeps thickly, grows not here, but the pale grass
> Is strewn with rocks, and many a shiver'd mass
> Of vein'd white-gleaming quartz, and here and there
> Dotted with holly and with Juniper."

This low shrub grows either on fertile or barren soils, on rocky mountains or on bogs, on hills or in valleys; but chiefly in open and bleak places, though sometimes in woods. It is common, not in this kingdom only, but in all the northern parts of Europe. In England it occurs chiefly on open chalky or sandy places, on hillsides and sea-cliffs; but with us it is of low growth, seldom attaining a greater height than five feet, although it occasionally forms a massy trunk, and becomes a small tree, while a dwarf variety trails over the ground. In days when shrubs and trees were cut into various figures, the Juniper was much employed for this purpose. The plant seems to injure the herbage, for the grass about the Juniper is often thin and poor.

This shrub sends out a number of tough branches, covered with a smooth brown or reddish bark, slightly tinged with purple, while the bark of the trunk is greyish-brown, cracked and scaly. The stiff evergreen leaves grow in threes round the branches, and are dark bright green beneath, and grey on the upper surface. Their acute points deserve Spenser's description :—

"Swete is the Juniper, but sharpe his bough."

The small green barren flowers appear in May, in little catkins, among the axils of the leaves, and are on different plants from the few-flowered fertile cones. The berries, which are about as large as currants, appear one summer, and, continuing green until the following season, then ripen into a dark-purple hue, covered, like the sloe, with a bluish-white powder or bloom. They are not juicy, but spongy; they have an aromatic flavour, and contain three oblong seeds. These fruits are useful, not alone to the wild bird of moor or fell, but also to man. When crushed, they yield an essential oil; and a very pleasant and wholesome beer, called *genévrette*, is made by cottagers in some parts of France with barley and Juniper-berries. Hollands and English gin were formerly flavoured with them, and they once formed an important article of commerce among the Dutch; but Professor Burnet remarks of the last-named liquor, that it is "wholly unconscious of their presence," the British manufacturers having substituted oil of turpentine. The berries yield, on boiling, a large amount of sugar; and Linnæus mentions that a decoction of these fruits, when fermented, forms a common beverage among the Swedes, who still eat Juniper-berries at their meals, in the form of a conserve. Our fathers not only employed them as a spice to their dishes, but praised their medicinal powers. "This admirable solar shrub," says one of our old writers, "is scarce to be paralleled for its virtues. The berries are hot in the third degree, and dry but in the first, being a most admirable counter-poison, and as great a resister of the pestilence as any grows: they are excellent good against the bitings of venomous beasts." Gerarde also adds his testimony to their worth, and says, "Divers in Bohemia do take, instead of other drink, the water wherein these berries have been steeped, who live in wonderful good health." The berries were much recommended by physicians to be eaten; and ten or a dozen every morning, fasting, was an old prescription for diseases of the lungs. They doubtless possess stimulating properties. In many Continental countries both the fruits and the wood of the Juniper are burned in hospitals to render the air wholesome; and the ancients were wont to throw the berries on the funeral pile. They are still used in German villages instead of spices, and for the purpose of flavouring the *sauer kraut;* and so abundant is the shrub on many moorlands of Germany, that the flesh of the heath-cock is said to be sometimes strongly flavoured with Juniper, and to be quite distasteful.

The wood of the Juniper is aromatic, and so pleasant is the odour of the young twigs, that the housewife in Norway strews them over her floor, as our country people would strew sand. In Evelyn's time spits for meat, and spoons, were made of this wood, and were thought to impart a wholesome property as well as an agreeable flavour to meat. The old notion of the ancients that the burning of Juniper-wood expelled evil spirits from the

dwelling probably led to some superstitious practices with the plant in later days, as we infer from occasional mention by the poets. Thus, in Bishop Hall's Satires, we find an allusion of this nature :—

> "And with glasse stills, and sticks of Juniper,
> Raise the black spright that burns not with the fire :"

while various ceremonies connected with the burning of this wood in some parts of Scotland, during the prevalence of an epidemic, have led to the inference that this old practice was a remnant of a Druidical superstition. The wood is capable of bearing a high polish, and is used by turners in making many small articles.

3. Yew (*Táxus*).

Common Yew (*T. baccáta*).—Leaves crowded, linear, evergreen; flowers sessile, axillary. One never thinks of a Yew-tree, with its dark-green foliage, without thinking, too, of its best accompaniment—some village church, by whose portal, perhaps, it has stood for centuries, seeming yet to be the "challenger of time." As in many cases it was green ere those grey walls or crumbling buttresses were reared, so too it will long survive the edifice which it now adorns, and utter to coming generations the silent lessons which it preaches to ours. So old is its aspect, that we can hardly imagine that it was ever young; and, venerable and evergreen, we feel how well fitted it is for a symbol of immortality; and, sombre as it is, how well Dryden's epithet of the "Mourner Yew" befits the old tree.

The fact that the Christian church was often reared, like that of St. Paul in London, on the site of an ancient heathen temple, must account for the great age of some of our old churchyard Yews. Many of them are undoubtedly older than the Conquest; and that celebrated old Yew of Brabourne, in Kent, now so long dead that no living inhabitant of the village saw its fall or knows its history—that ancient tree is believed to have been three thousand years old, and to have lived in those days when the shepherds listened to the glorious anthem sung by angels, "Glory to God in the highest, and on earth peace, good will toward men." It must, however, be confessed that the means by which some botanists have believed it possible to ascertain the age of the Yew are not universally admitted among scientific men. Evelyn described this tree, in his time, as fifty-eight feet eleven inches in circumference, having, as he says, measured it himself. Mr. Bowman, who wrote, some years since, in the *Magazine of Natural History*, an interesting paper on "The Longevity of the Yew, and its Connexion with Churchyards," thinks it probable that our pagan ancestors, on their first arrival here, considered the Yew as the best substitute for the cypress in decking the graves; and this writer refers to some lines of a very ancient Walsh bard, which are thus translated by Dr. Owen Pugh: "The Minster of Esgor and that of Hênllan, of celebrity for sheltering Yews." *Hênllan* signifies "an old grove," thus proving that its church stood where Druidical worship had been performed.

When Augustine was sent by Gregory the Great to preach Christianity in Britain, he was enjoined to purify, and not to destroy, the temples of

pagan worship; and it is not unlikely that the very presence of the venerable Yew-trees would prove an attraction to these sites. The old pagans, like the modern heathen, loved to place trees around the place of worship. We may trace the custom even in those times when Israel, falling into the idolatries of the surrounding nations, had altars in groves and on high places, and forsook the God of their fathers, to worship the idol beneath the green tree.

But many Yews, on which we yet look as we go up to the house of prayer, have been planted since the Christian faith shed its glorious influence over the hearts and homes of this land. When the doctrine of the immortality of the body, as well as that of the soul, came to be fully and generally recognised, the Yew, one of the greenest and longest-lived of trees, would yet seem an appropriate plant to place by the grave. The association of this tree with a spot at once dear and solemn would be long ere it lost its hold on the heart of the Christian; and the thoughtful man yet likes to sit beneath its boughs, and think of the times long since passed away, and the men whose remains it overshadows. Then the convenience of such a tree, as affording shelter to those who have come over field and hill to the sound of the bell, and are awaiting the service, would afford another reason for planting the Yew near the church-porch; and the practice of placing evergreens on the coffin and in the grave would fit it for a further use. No record seems in existence which tells that the Yew was placed there that it might furnish the men of the time with wood for the bow; though we know that the wood of the consecrated Yew of the churchyard was worth more than the wood of an ordinary tree. Thus, the ancient law of Wales records: "A consecrated Yew, its value is a pound; a Yew-tree not consecrated, fifteen pence."

In the olden times of England, the wood of the Yew was of no inconsiderable importance; indeed, it was second only to that of the oak itself, as an old proverb might remind us, which says—

> "England were but a fling,
> But for the bow and the grey goose-wing."

And the Yew-wood was far preferred to that of any other tree for the weapon of the archer. From England's earliest days, the bow figures in her history, and the imagination reverts to the story of King Alfred sitting on the peasant's hearth, mending his bows and arrows, and to many a tale of Robin Hood and his merrie men, in which legend and history are intermingled. Chaucer calls the tree the "Shooter Yew," and describes his archer as carrying a "mightie bowe;" and, many years later, Spenser refers to the material of which such bows were made—

> "Long he them bore above the subject plaine,
> As far as Eughen bowe a shaft may send."

The churchyard Yews scattered over the kingdom could have furnished but few of the bows required, though doubtless they, as well as many other trees, both wild and planted, contributed their due proportion, when, by a statute of Edward IV., every Englishman and Irishman residing in

England was commanded to have a bow of his own height, made of Yew, wych-hazel, or awburne. Foreign Yew was, however, preferred to that of English growth, and bows of "Outlandish Yew" sold at a high price. Michael Drayton says,—

"All made of Spanish Yew, their bows were wondrous strong."

Ships trading to Venice were desired to bring ten bow-staves along with every butt of Malmsey. Several of our British kings fell beneath the power of the bow, as Harold, William Rufus, and Richard Cœur-de-Lion. It is, too, the most ancient of weapons, and even by the earliest Greek and Roman writers the Yew was renowned as the material especially valued by the archer.

In those cruel battles when our kings laid claim to the succession of the throne of France, the archers were the chief reliance of England, and many a noble Yew yielded its wood to the warrior, as Wordsworth has said—

"Not loth to furnish weapons for the bands
Of Umfraville or Percy, ere they march'd
To Scotland's heaths; or those that cross'd the sea,
And drew their sounding bows at Agincour,
Perhaps at earlier Crecy or Poictiers."

So general was the use of the bow, that Grafton relates how, in the reign of Henry IV., after an affray at Cirencester, fourscore archers of the town were thanked for their services, among which were "certaine good women." Long after the introduction of fire-arms in the fourteenth century, the bow was used in battle, as in that of Flodden Field; and even as lately as the days of Queen Elizabeth, fire-arms were so badly made that an archer is said to have been able to shoot six arrows in the time required for charging and discharging a musket. Even after the bow had almost, or quite, fallen into disuse in battle, yet archery was much practised as an amusement. The good and learned Roger Ascham not only amused himself with shooting at the hazel-wands and rose-garlands, then used as marks, but published, in 1554, his "Toxophilus, or the Schole and Partitions of Shootinge," wherein he tells of the classical nature of the sport and its connexion with Apollo. He praises the art as "the companion of vertue, the mainteyner of honestie, the encrease of wealth and wealthinesse, which admitteth nothinge in a maner into his companye that standeth not with vertue and honestie." From this old advocate of the art, as well as from various other writers of those times, we find how greatly the "Archer Yew" was prized. Ascham says: "The best wood is Yew; the colour should be uniform; those made of a bough are for the most part knotty, weak, and seldom wear to a good colour; the plant is better, but the bole of a tree is best of all."

The trunk of the Yew-tree is short, thick, straight, and furrowed, and its wide-spread boughs, well filled with foliage, cast a broad shadow—a shadow which the ancients believed would be fatal to one who slept beneath it. When fully grown, the tree is from thirty to forty feet high, and has at first a brown bark, which soon peels off. Its almost sessile green leaves, placed in two rows, are of a deep dark green, glossy above and paler beneath. The flowers are axillary and solitary; those having stamens are of a light yellowish hue, from their abundant pollen; and the pistil-bearing ones, surrounded

with scales, somewhat resemble minute acorns. Thev are to be seen in March, as described by Bishop Mant—

"Nor curious less the mountain Yew,
Which, 'mid its leaves of solemn hue,
Its sulphur-coloured anthers now,
In clusters on the dark-green bough,
Here void of cup or blossom fair,
Exhibits; and at distance, there
Its verdant chalices minute,
The embryos of its scarlet fruit."

The Yew grows wild in this kingdom in mountainous woods; and we may sometimes find a solitary Yew standing on the hill-sides, its deep verdure contrasting with the brighter tint of the grass. Such have we seen on the chalky hills of Kent, not far from Druidical remains, though not old enough or near enough to be connected with them; and we have thought of Wordsworth's lines—

"This solitary tree, a living thing,
Produced too slowly ever to decay,
Of form and aspect too magnificent
To be destroy'd."

The Yew was once abundant in the New Forest, but doubtless many of these trees of olden times have perished by the axe; and as some of the old reasons for planting them exist no longer, they are now much fewer than in past ages. But there are spots in this kingdom where the tree grows in abundance. The Rev. C. A. Johns, in his "Forest Trees of Britain," says "that on cliffs near Coomb Martin, in North Devon, numbers of these trees grow in places accessible only to birds;" and he mentions also that the Yew Island in Loch Lomond furnished, a few years since, three hundred Yews for the axe, while several noble trees yet remain there. "The most remarkable assemblage of Yews in Great Britain," says this writer, "is at a place called Kingley Bottom, about four miles from Chichester. As to when or by whom they were planted, or indeed whether they were planted by the hand of man at all, history is silent. They are about two hundred in number; one-half of them form a dense dark grove in the depth of the Bottom; the remainder, smaller ones, are scattered over the sides of the valley, intermingled with fine plants of juniper and holly." The Yew is frequent in Scotland, and grows at a great elevation on the limestone rocks of Ireland, though rarely attaining there any great size. It is indigenous to most European countries, but it is almost unknown in Sweden and Lapland. Linnæus found it in but one place in the latter country, where the people called it *Id*, or *Idegran;* and Dr. E. D. Clarke, when in Sweden, saw it growing wild once only, and then not larger than a shrub; while it was reared with care, and regarded as a vegetable treasure, in the botanic garden of Upsal.

The "Baneful Yew," the epithet of Virgil, was particularly appropriate in times when men believed the tree to be very noxious. Pliny said, "It is unpleasant and fearfull to looke upon, as a cursed tree, without any liquid substance at all." The ancients sat not beneath its shadow, nor would touch of its fruits. They would not allow their beehives to be placed near it, lest the bee should suck its poison, nor would they have drunk wine from a

bowl made of its wood. Shakspere calls it the "Double Fatal Yew," and even in later days, poets, influenced by their classic associations, have described it as injurious. Both in ancient and modern times, the plant has been used medicinally; and even within the present century, an Italian physician has stated that Yew-leaves, when administered in small doses, have a similar power to the *Digitalis*, in reducing the circulation; and that its juice, like that of the foxglove, would prove fatal if taken largely. Plutarch and Pliny both thought the coral fruits poisonous; and M. Decandolle and some other botanists regard them as dangerous; though Dr. Lindley considers that the seeds which lie in the scarlet cup are the noxious part. Sir J. E. Smith says that he has, in boyhood, eaten these sweet and juicy fruits without experiencing any ill-effects; and the author of these pages ate them in childhood, year after year, and in great numbers, without injury; but the bitter seeds within were of course rejected. The leaves, especially those of the young shoots, are certainly, under some circumstances, poisonous to animals. Professor Wiborg, of Copenhagen, is of opinion that they are so only when eaten without the admixture of any other food; but that when eaten with three or four times the quantity of wholesome vegetables, they are innocuous. Other botanists believe that they are poisonous only when in a withered state.

The Yew was formerly much used for hedges, and also for clipping into various forms, as cones, spires, and pyramids, birds and animals. Even yet there exist many trees familiar to us from earliest days, as uncouth representations of peacocks, while others still show a well-clipped surface, cut into a globular form. Professor Burnet, writing of two trees of this kind in Bedfont Churchyard, says they have been thus disfigured for upwards of a century and a half, by the annual clipping of their shoots; they have no chance of escape from this condition, some eccentric person having left an annuity that they may be thus clipped for ever.

Many venerable and picturesque Yews interest us the more, from their connection with history. Such are the magnificent trees near Fountains Abbey, beneath whose shadow the monks are said to have taken shelter while rearing the monastery. One of these trees, which is fifty feet high, is proved from old records to be upwards of eight hundred years old. Such, too, is the Ankerwyke Yew, near Staines, supposed to be upwards of a thousand years of age, on which the assembled barons might have looked when the Great Charter was signed, and beneath whose shadow Henry VIII. is believed to have held tryst with the ill-fated Anne Boleyn.

The Yew is a valuable tree. Its wide evergreen foliage is a shelter for birds, when shelter is scarce, and many birds eat the berries. The wood is hard, close-grained, elastic, and durable, and forms excellent timber; while the Yew-wood table is far more beautiful than that made of mahogany, and various ornamental articles are cut from the beautifully-veined trunk and root. As it will outlast almost every other wood, it is well fitted for piles, posts, and other objects which are exposed to damp and weather; and it is a common saying in the New Forest, that "a post of yew will last longer than an iron one.'

Class II. MONOCOTYLEDONOUS PLANTS.

The plants of this class have only a single cotyledon or seed-lobe to their embryo; first-formed leaves alternate with each other. The stem is composed of woody fibre, cellular tissue, and spiral vessels; but there is no true bark or pith, nor is there any trace of concentric annual layers, but wood and cellular tissue are mixed together. The stem increases by the addition of new matter within: hence the term Endogenous, or Inward Growers, is often applied to these plants. In our country the Monocotyledons are all herbaceous, and they may, in general, be readily distinguished by their leaves. These are commonly alternate, sheathing, and, in almost all cases, their veins run in parallel lines from the base to the point of the leaf, the principal veins being connected by nearly simple secondary veins, as in the Orchises and Grasses; while, in the Dicotyledons, the veins diverge from the midrib to the margins of the leaves, and are connected by smaller veins branching in all directions, and forming a network, as in the leaves of the rose or bramble. The flowers of Monocotyledons have stamens and pistils—three, or some multiple of three, being the number which predominates in the parts of fructification—and they are with or without a perianth. A large number of plants, forming Sub-class II., Glumaceæ, have chaffy scales or glumes, instead of sepals and petals. This Sub-class comprises the true Grasses, and their allies, the Sedges and Sedge-like plants.

Sub-class I. Petaloideæ.

Flowers having petals arranged in a circular manner; or without petals.

Order LXXXII. HYDROCHARIDACEÆ—FROG-BIT TRIBE.

Flower-buds enclosed in a sheath; sepals 3, green; petals 3; stamens 3, 9, 12, or more; ovary inferior, 1 or many-celled; styles 3 or 6; stigmas 3—6; fruit dry or juicy, not bursting, 1 or many-celled. The plants of this order are floating aquatics, possessing no important properties.

1. Anácharis.—Stamens and pistils on different plants; barren flower, having a 6-parted perianth and 9 stamens; fertile flower with a long thread-like tubular spathe, 3 sterile stamens, and 3 stigmas; capsule 1-celled, few-seeded. Name said by the authors of the "British Flora" to be from the Greek *ana*, like, and *charis*, an abbreviation of the next genus.

2. Frog-bit (*Hydrócharis*).—Stamens and pistils on different plants; stamens 12, 3 or 6 wanting anthers; ovary 6-celled; stigmas 6. Name from the Greek *hydor*, water, and *charis*, elegance.

3. Water Soldier (*Stratiótes*).—Stamens and pistils usually on different plants; stamens 12, surrounded by many imperfect ones; ovary 6-celled; stigmas 6. Name from the Greek word for a soldier, because of its prickly, sword-shaped leaves.

1. Water-thyme (*Anácharis*).

Water-thyme (*A. alsinástrum*).—Leaves 3 or 4 in a whorl, linear, or oval oblong, thin, and minutely serrated; perennial. This plant, which is

of recent introduction into this kingdom, is now generally distributed. It is an aquatic, forming thick, entangled, submerged masses of considerable extent, and so heavy, that when cut, instead of rising, like most water-plants, to the surface, or floating onwards to the sea, it falls immediately to the bottom. Its slender whorled leaves are of a rather light green, and as thin as some of our grass-green seaweeds, growing on a long, brittle, round, almost transparent stem, which branches in all directions, sending out at intervals its fibrous roots, and bearing among its whorls of leaves, from May to September, very small pinkish-green flowers. The whole plant, both in form and structure, is readily distinguished from every other of our native aquatics.

The smallest portion of this plant, having the root attached, will, if broken off, propagate itself immediately; and the history of the progress of this weed is now well known, and has become a matter of painful interest to many in this kingdom, though the mode of its introduction still remains a mystery. It is identical with the American aquatic termed *Udora canadensis* by Nuttall, and *Elodea canadensis* by other authors, and was originally discovered in this country by the late Dr. George Johnston of Berwick, in 1842, in the lake of Dunse Castle, Berwickshire, though it had been found in County Down six years earlier. The attention of several scientific men was called to the plant, but for several years nothing further was heard of it, till it was seen again by Miss Kirby, in 1847, in the reservoirs adjoining the Foxton locks on the canal near Market Harborough, in Leicestershire; and as the locks had been cleansed about two years before, there was reason to believe that its introduction had been recent, although at that time it had become abundant in the water. Mr. Babington then published an account of this plant, and Dr. Johnston, on reading it, immediately recognised the description to be that of the same weed which he had seen some years before. On examining the loch of Dunse Castle, he found that this water-weed had not only accumulated there in great profusion, but that, having made its way out of the loch, it was forming matted patches in several places down the Whiteadder, in its course to the Tweed. In the same season it had appeared in the Nene, a tributary to the Trent in Nottinghamshire; and propagating itself with its usual rapidity, it soon formed so large an amount of aquatic herbage, that it threatened to block up one of the two streams into which the Trent there divides; while in the Trent itself it afterwards grew in such profusion, that in some parts of the river fishing became quite impracticable, the fishermen finding their gear unable to compete with this new and formidable vegetable hindrance. This plant was also found in the Watford locks, in Northamptonshire, growing in numerous and immense tangled masses.

It was in the summer of 1849 that this troublesome water-weed was first discovered in Derbyshire and Staffordshire, where it formed, as it were, small green meadows on the water, both in the Trent and the adjoining canals; in 1850 it had gathered in profusion near Rugby in Warwickshire, and in the following year it had appeared in the Cam at Cambridge, behind the colleges, and by its growth so clogged up the river, that the barges which had to make their way through its clumps required the aid of extra horses. The

1. LONG-FLOWERED ANACHARIS
Anacharis alsinastrum.

2. FROG-BIT.
Hydrocharis morsus-ranæ

3. WATER-SOLDIER
Stratiotes aloides.

Pl. 214.

collegians were, by its masses, prevented from rowing, as it not only impeded the course of a boat, but would even overturn it; while the most skilful swimmer became entangled in its toils. Bathers found it clinging to their limbs "like scratch-weed"; and in more than one case fatal accidents ensued in consequence of its intertwining branches. It was afterwards observed at Ely, where it occasioned immense trouble by choking up the railway-dock; and an engineer found that, in the year 1852, it had so hindered the drainage in the fenny parts of Cambridgeshire and Huntingdonshire, that it was equivalent to a rise of one foot in the outlet level. Mr. Marshall of Ely, who gave great attention to the progress of this weed, and who, in 1854, published a pamphlet recording his observations, said: "The specific gravity of this plant is so nearly that of water, that it is more disposed to sink than float; and the cut masses may be seen under water, either on or near the bottom, rolling over and over, like woolpacks, clinging to everything they meet with, and accumulating in great quantities in locks and bridges, and grounding in shallow water. Its mode of growth may be best seen in still and shallow waters, where it seems to spring first from the two sides and the bottom, meeting at length in the middle, and completely filling up the watercourse, as I have seen in some cases, almost to the exclusion of the water."

Since the third discovery of the Anacharis in 1847, the plant has been found making its progress every season into some new or hitherto unobserved locality; and, during the course of the year 1855, it was seen for the first time growing in abundance in a land-drain at Weybridge and Walton, which empties itself into the Thames, blooming there in profusion.

None of the theories respecting the introduction of this plant into the Dunse loch are very satisfactory; but when once the weed reaches the waters in the centre of England, its dissemination ceases to be a mystery. Mr. Marshall, in a communication made to the *Gardener's Chronicle*, in 1853, says: "In the letter which I published last year on this remarkable plant, I stated that when once introduced, it would, in a few years, inoculate any connected water system from one end to the other. I added, that if anyone would look at a good map of England, it would appear that there was hardly a spot so well situated as a centre from which to inoculate our English rivers, as Rugby, or the Watford locks near the Crick railway, where it was found in profusion. From such a point, situated at an altitude above the sea of 350 feet, and very nearly at the line of water-shed which divides England into the river-basins of the Severn on the west, the Trent on the north, the Ouse on the east, and the Thames on the south; a few detached pieces travelling different ways would enter the Severn through the Avon, by the way of Rugby and Warwick; the Thames, through the Cherwell; the Nene, above Northampton; the Ouse at Buckingham; the Welland at Market Harborough; the Trent by the Anker, Tame, and Soar; from the Soar it might enter the Witham, through the Grantham Canal, and thence by Lincoln into the water-courses which drain the fens of North Lincolnshire, and which now are so full of this weed; while, at the junction of the Trent with the Humber, that large river and its tributary streams might have been visited by this troublesome emigrant."

In some instances, from an inexperience of the injury done by this water-weed, it has been intentionally introduced. This was the case in regard to the river Cam. In 1847 a specimen was brought from the Foxton lock, and placed in a tub in the botanical garden of Cambridge; and in the succeeding year a small portion of the weed was placed there in the conduit stream, the exact spot being, as usual in such cases, indicated by a small stick. In the next year the plant had not only quite covered the stick from view, but had extended itself and spread all over the ditch. Thence it made its way into the Vicar's brook; thence into the Cam. "Thus," says Mr. Marshall, "we see proved to demonstration, that the short space of four years has been sufficient for one small piece of Anacharis to multiply so as to impede both navigation and drainage." A story is current that a lecturer on botany, in Scotland, who was remarking on the peculiarities of this plant, directed his hearers to look for specimens in a neighbouring canal, in which he assured them he had, some time since, planted the weed, and where indeed they found it. In the course of some time the evil thus inadvertently introduced had so injured some water-works by its masses, that the owner of the water threatened the lecturer with legal proceedings for having brought it there.

A remarkable circumstance respecting this weed has led to the inference that all the plants in this country have proceeded from a single piece. The flowers bearing pistils and stamens occur on different individual plants, and in every specimen of the Anacharis seen in this kingdom until many years after, the pistil-bearing flower only was found—and thus it was not, as in the rivers of America, propagated by seed. In that country an identical or closely allied species exists in profusion, but in the more rapid waters it is not injurious, as in the still or slow-moving streams of this kingdom.

Although the Anacharis was at one time so abundant in Dunse loch that a boat could with difficulty be pulled among it, yet it has now quite disappeared from that place. The same thing has since happened in many places where it abounded soon after its introduction. A correspondent in the *Berwick Warder* attributes its removal to the swans, though these birds, he says, were accused of having originally brought it there. He remarks that the swans lived entirely on this plant, throve well, rearing a numerous family on the quiet waters, till the year 1851, at which period the plant disappeared; the birds then seemed to pine, and finally all died, save the original pair. These swans, no longer able to find this favourite food in the loch, followed the small burns down to the Whiteadder in search of it, and seemed to be its most relentless persecutors. Swans, as well as ducks, geese, and other aquatic fowls, will probably aid in its destruction, as they destroy the weeds which they feed upon; and an observer of their habits remarks, that "they have been known, when water-weeds were scarce, to eat through large masses of white lilies, leaving nothing but the stem. Everything less strong in its growth than the yellow water-flag seems to be destroyed by the cropping of these birds."

The Anacharis is called by the fishermen the Water Thyme, from a very slight resemblance to the foliage of Thyme, in the form of the young branches clad with leaves.

2. FROG-BIT (*Hydrócharis*).

Common Frog-bit (*H. mórsus-ránæ*).—Leaves stalked, kidney-shaped, entire; flowers springing from a membranous sheath; perennial. The large white clustering blossoms of this plant float on many ponds and stagnant waters during July and August. They are thin and crumpled like the flower of a poppy, but are white and glossy, and sometimes tinged faintly with pink, their satiny surface looking almost like mother-of-pearl in its iridescent hues. The long roots proceed at intervals from the horizontal floating stems, and the glossy green roundish leaves have long stalks, and show very distinctly the veins which run from the base to the tip. The fruit is a roundish leathery capsule, containing many seeds. This plant was called by the old writers Lesser Water Lily. Its name of Frog-bit has its synonym in several Continental countries. It is the *Froschbiss* of the Germans, and the *Vorschenbeet* of the Dutch. The Russians term it *Liaguschnik*, and the French *Morène;* and it ornaments the still waters of many European lands. It does not occur as a Scottish wild flower, nor is it one of the most common aquatics in England, though if planted it grows very readily, and deserves to be more frequently introduced into the streams and pools of gardens.

3. WATER-SOLDIER (*Stratiótes*).

Water-Soldier (*S. aloides*).—Leaves sword-shaped, triangular, prickly, from a perennial creeping stem. Except in the fenny parts of Norfolk, Lincolnshire, and Cambridgeshire, the Water-Soldier is a rare wild flower, and it is especially so in the north of the kingdom. It is one which would immediately attract attention by its dissimilarity from any other native plant, and its resemblance to an aloe. Its numerous rigid prickly dark-green leaves rise from the creeping runners, which are embedded in the mud at the base of the lake or ditch. The flower-stalk is about five or six inches long, flattened and two-edged. It bears, at its summit, a two-leaved sheath, out of which arise several very pretty, large, delicate white flowers having stamens, or one flower only bearing pistils. During the greater part of the year the plant remains submerged, but it raises itself to light and air during the flowering season, and then sinks to the bottom. The seeds sometimes ripen in the waters, but the plant is chiefly increased by offsets. The joints of the runners are furnished with small drooping buds on long stalks, these buds being composed of two scales folded together, between which may be seen, curiously enfolded, the embryo leaves of the future shoot. The leaves are much like those of the aloe, but of darker green, and have rigid, pellucid, sharply-pointed teeth. It appears to have been planted in the Scottish lakes, as well as in some English pools. It increases so rapidly as to become troublesome in ornamental pieces of water, and is said to be acrid; and, when growing in large quantities, to injure the water, and render it unwholesome. It is often called Water Aloe. The French term it *Aloides;* and the Germans, *Wasserfeder.*

Order LXXXIII. ORCHIDEÆ—ORCHID TRIBE.

Perianth of 3 sepals, usually coloured, and 3 petals, the lowest unlike the others and often spurred; stamens and styles united into a central column; anther of 2 cells, containing pollen which is either powdery or granular, but more frequently consists of 2, 4, or 8 waxy masses (*pollinia*) sometimes raised on minute stalks; stigma a moist space in front of the column; fruit a 3-valved many-seeded capsule. The Orchid tribe consists of herbaceous perennial plants, those which are fixed in the ground having usually one, two, or more fleshy knobs attached to the base of the stem, and bearing very handsome and singular flowers. The tropical species often grow on trees, in the crevices of the bark, and have twisted and often stem-like roots. The groups of this order have been arranged by botanists according to the different condition of the pollen masses; and the manner in which these adhere.

1. Bog Orchis (*Malàxis*).—Sepals spreading, lip very small, erect, without a spur; 2 side petals turning upwards; column round and very short, the anther hinged to its top. Name from the Greek *malaxis*, softness, in allusion to the delicate texture of the species.

2. Fen Orchis (*Líparis*).—Perianth spreading, lip flat, expanded, entire, turned backwards; column long. Name from the Greek *liparos*, unctuous, in allusion to the surface of the leaves.

3. Coral-root (*Corallorhíza*).—Petals and upper sepal converging, lateral sepals spreading; lip turned down at the base, its spur connected with the ovary, column free; ovary and its stalk straight. Name from the Greek *korallion*, coral, and *rhiza*, a root, from the form of the roots.

4. Helleborine (*Epipáctis*).—Lip swollen below, the extremity either entire or 3-lobed, the middle lobe the largest, and contracted in the middle; ovary straight, on a twisted stalk. Name given by the Greeks to some species of Hellebore.

5. Bird's-nest or Tway-blade (*Listera*). — Perianth spreading; lip 2-lobed, and turned downwards; pollen farinaceous. Named in honour of Dr. Martin Lister.

6. Lady's Tresses (*Neóttia*).—Perianth incurved, the two lateral sepals erect; lip channelled, embracing the wingless column, and uniting below with its base. Name from the Greek *neottia*, a bird's nest.

7. Goodyéra.—Perianth ringent, the two lateral sepals placed beneath the lip, which is swollen at the base, and entire at the extremity; column free. Named in honour of Mr. John Goodyer, an English botanist of Queen Elizabeth's time.

8. Gmelin's Coral-root (*Epipogium*).—Perianth somewhat spreading; lip uppermost, 3-lobed, shortly spurred; column short, stigma in front; ovary not twisted. Name from the Greek, *epi*, upon, and *pogon*, beard or lip, from the latter being uppermost.

9. Orchis.—Perianth ringent, hooded; lip 3-lobed, spurred. Name from the Greek, *orchis*, which was given to plants with double tuberous roots.

10. Gymnadénia.—Perianth ringent; lip spurred at the base beneath.

1 BOG ORCHIS
Malaxis paludosa

2 TWO LEAVED LIPARIS
Liparis loeselii

3 SPURLESS CORAL ROOT
Corallorhiza innata

4 BROAD LEAVED HELLEBORINE
Epipactis latifolia

Name from the Greek, *gumnos*, naked, and *aden*, a gland, because the glands on the stalks of its pollen masses are uncovered, and not, like those of the Orchis, enclosed in a little pouch; a circumstance which chiefly distinguishes this from that genus.

11. BUTTERFLY ORCHIS (*Habenária*).—Perianth ringent, hooded; lip 3-lobed or entire, spurred. Name from *habena*, a thong or strap, from the shape of the spur.

12. MAN ORCHIS (*Áceras*).—Perianth ringent, hooded; lip 3-lobed without a spur. Name from the Greek, *a*, without, and *keras*, a horn, in allusion to the absence of the spur.

13. MUSK ORCHIS (*Herminium*).—Perianth bell-shaped with erect segments; lip 3-lobed, swollen beneath at the base, without a spur. Name from the Greek, *hermin*, the foot of a bed-post, suggested by the tuberous roots.

14. ÓPHRYS.—Perianth spreading; lip variously lobed, without a spur. Name from the Greek *ophrus*, the eyebrow, the plant having been said by Pliny to be used in staining the eyebrow black; or perhaps from the eyebrow-like markings of the lip.

15. LADY'S SLIPPER (*Cypripédium*).—Perianth spreading; lip large, inflated; column with a large terminal dilated lobe, or sterile stamen separating the two anthers; two lower lateral sepals often combined. Name from the Greek, *Kupris*, Venus, and *podion*, sock, or slipper.

1. BOG ORCHIS (*Maláxis*).

Bog Orchis (*M. paludósa*).—Stem with from 3 to 5 leaves, which are oval and concave; lip concave, acute. This rare species, which is the smallest and least attractive of our native Orchids, grows on spongy bogs in many parts of the kingdom. It is found among, or rather on, the roots of the sphagnum-moss common to such places, bearing, from July to September, a small but long spike of yellowish-green blossoms, on an erect stem from two to four inches in height. The flowers are very small, the sepals egg-shaped and spreading, two turning upwards, their bases embracing the base of the upper lip. The leaves are fringed at the upper part with minute tubercles, rendering the margin roughish. These tubercles had been believed by Sir W. J. Hooker to be little bulbous leaf-buds, and were fully ascertained to be so by Professor Henslow, who examined some of the plants which grew in great plenty on Gamlingay Heath, in Cambridgeshire. "Every specimen which I gathered," says this botanist, "exhibited this fringe in a greater or less degree, and it required only the assistance of a common lens to show that it was occasioned by numerous little bulbous germs spreading from the edge and towards the apex of the leaf. They were of the same colour as the leaves, green on those which were more exposed to the light, and quite white on those which were lowest on the stem, and half buried in the peat and moss. Some of these germs were so far advanced as to have put forth the rudiments of two or three leaves, and others less so." This Orchis often forms little groups of half a dozen or more plants. John Ray describes it as growing in his time in divers places in Romney Marsh, in

Kent. It is probable that it is not so rare as is generally thought, its small size and yellow-green flowers rendering it very inconspicuous.

2. Fern Orchis (*Líparis*).

Two-leaved Fern Orchis (*L. loesélii*).—Leaves 2, broadly lanceolate; stem triangular; lip entire, longer than the perianth. This, which is a much rarer plant than the preceding, is found also on spongy and sandy bogs in Norfolk, Suffolk, Huntingdon, and Cambridgeshire, and Dillwyn found it in East Kent, growing at Ham Ponds. Its stem is about six inches high, and its flowers, which expand in July, and are of pale greenish-yellow colour, grow in the form of a loose spike. The plant is thought by some writers to grow upon the roots of moss. The genus is by some botanists termed *Stúrmia*.

3. Coral-root (*Corallorhíza*).

Spurless Coral-root (*C. innáta*).—Spur very short, or wanting; root of thick fleshy fibres. This is a rare plant of boggy woods, found in the east of Scotland. Its stem is from six to twelve inches high, and it bears, in July, a few yellowish or olivaceous flowers in a short loose spike. The sepals are keeled and spreading, lanceolate and acute, and the petals are shorter, while the oblong whitish lip is waved, and sometimes lobed, at the margin, and has a few purple spots upon it. The plant has no leaves, and is distinctly characterized by the intertwining fibres of its underground stem, which, as our plate will show, resemble a piece of branched coral in form, though of pale-brown colour. It is a native of boggy soils in the northern part of the globe, where it feeds upon decaying vegetable matter.

4. Helleborine (*Epipáctis*).

1. **Broad-leaved Helleborine** (*E. latifólia*).—Leaves oblong or egg-shaped, many-nerved, embracing the stem, upper ones narrower; raceme long and many-flowered, lower bracts longer than the flowers; upper lobe of the lip broadly egg-shaped, or somewhat heart-shaped at the base, broadest below the middle, with two protuberances on the disk as long, or nearly as long, as the sepals, and almost entire. Several varieties of this species occur, differing in the shape and breadth of the leaves, the colour of the flowers, and in the size of the terminal lobe of the lip. The Broad-leaved Helleborine is not infrequent in the woods of mountainous countries, and is found both in woods and on mountain slopes in some parts of this kingdom. The flowers appear in July and August, and vary in the different forms from purplish-green to an intense purple. The stem is from one to three feet high, the leaves always becoming narrower towards its upper part, and the underground stem creeping with long fibres. The forms generally recognised are:

Sub-species *E. latifolia* proper; stems not tufted; sepals ovate-oblong; tip of lip broader than long; greenish-purple. The commoner form.

Sub-species *E. purpurata*; stems often tufted; sepals oblong-lance-shaped, more pointed than in the type; tip of lip only as broad as long. Flowers violet-purple. Rare, found only in the south of England.

Sub-species *E. atro-rubens*; stems shorter, leaves smaller; tip of lip

1 MARSH HELLEBORINE
Epipactis palustris.

2 LARGE WHITE H
E. grandiflora

3 NARROW LEAVED WHITE H
E. ensifolia.

4 PURPLE H
E. rubra

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broader than long, rounded. Flowers red-brown, appearing a month earlier than the others. Found on the limestone cliffs of Orme's Head (Carnarvonshire), in Yorkshire, Sutherland, etc.

2. **Marsh Helleborine** (*E. palústris*).—Leaves lanceolate, embracing the stem; bracts generally shorter than the flowers; terminal lobe of the lip roundish oval, or inversely egg-shaped, broadest at or above the middle, crenate, very blunt. This, which is a local species, is found on wet lands, in Britain, and more rarely in Ireland. The flowers, which are somewhat drooping, grow in a lax spike, on a wiry stem, about a foot or a foot and a half high. The stem is sometimes tinged with purple. The sepals are purplish-green, the petals and lip white, varied with rose colour.

3. **Large White Helleborine** (*E. grandiflóra*).—Leaves egg-shaped, or somewhat lanceolate, sessile; bracts longer than the smooth ovary; sepals erect, blunt; terminal lobe of the lip oval, abruptly blunt, shorter than the rest of the petals; rootstock creeping. This is a very pretty and conspicuous plant among trees and bushes, on a chalky soil.

> "It grows in deep green woods with tangled alleys,
> Where hues of sunshine stream athwart the trees,
> Where moss the thickest springs in dewy valleys,
> Where tassell'd grasses nod upon the breeze;
> Where rambling wreaths delay the rash intruder,
> Holding him fast as each would notice claim,
> Where slender sapling twigs, a barrier ruder,
> Close round him o'er the path through which he came."

The flowers grow on the upper part of the stem, in a distant spike, during May and June. They are of large size, the sepals nearly all equal, including the small lip marked with raised lines, and which, though white externally, is yellowish inside. The hue of the flower differs a little in different specimens; in some it is pure as snow, in others delicately cream-coloured. The leaves are broad, and bright green and glossy. Some writers place this and the following species in a distinct genus, termed *Cephalanthera*, calling this *C. pallens*.

4. **Narrow-leaved White Helleborine** (*E. ensifólia*).—Leaves lanceolate; bracts much shorter than the smooth ovary; terminal lobe of the lip blunt; rootstock creeping. This is a rare plant of mountainous woods, flowering in May and June. Its large blossoms are somewhat spiked, and are white, the lip marked with several white lines and a yellow spot in front. The stem is usually more than a foot high.

5. **Purple Helleborine** (*E. rúbra*).—Leaves lanceolate and acute; bracts longer than the downy ovary; terminal lobe of the lip pointed and marked with raised lines; rootstock creeping. This is a very rare plant of limestone woods in Gloucester and Somerset. The flowers are large and rose-purple, with a white lip, expanding in June and July, and forming a loose spike on a stem about a foot in height.

These Helleborines are fertilized by wasps and flies, and to accommodate them the lip is hollowed out, basin fashion. After partaking of the honey, the wasp is compelled to come in contact with the stigma, and then to carry away pollen wherewith to fertilize the next Helleborine it visits.

5. Bird's-nest or Tway-blade (*Listera*).

1. **Common Tway-blade** (*L. ováta*).—Stem downy above, with only two opposite large egg-shaped leaves; column of fructification with a crest which includes the anther. This plant, well named Tway-blade, is readily distinguished from all our native orchids by the two broad, glossy, green, strongly-nerved leaves, often eight inches long. The plant is from a foot to a foot and a half high, the flowers small in proportion to leaf and stem, of a yellowish-green hue, and forming a long loose spike from April to June. It is found in shady places, in orchards and pastures, and still more commonly in woods. Its rootstock is composed of numerous long fleshy fibres, connected in bundles by a main fibre. The two-lobed lip is slightly hollowed at its base, from which a channel runs down the centre in which honey is secreted. Flies and beetles follow this up to the end, where their heads come in contact with the tongue-shaped portion (*rostellum*) of the column on which the pollinia stand. At the touch the rostellum exudes a drop of liquid cement at the base of the pollinia, which therefore become attached to the insect's head, and are carried off to fertilize other Tway-blade flowers.

2. **Heart-leaved Tway-blade** (*L. cordáta*).—Stem smooth, with two opposite heart-shaped leaves; column without a crest; lip with a tooth on each side at its base. This is a much smaller species than the last, its stem rarely exceeding six inches in height, and its smooth leaves being usually little more than an inch long. It produces a few dull brownish-green flowers, very small, and forming a loose spike; these expand from June to August, and have somewhat spreading sepals and a narrow drooping lip; the rootstock consists of a few stout fibres. It occurs in mountainous districts and on turfy moors, with a marked fondness for heather as a protection. It is rare in Ireland.

3. **Common Bird's-nest** (*L. nídus-ávis*).—Stem leafless, but beset with sheathing brown scales; column without any crest; lip linear-oblong, with two spreading lobes. This is a very singular plant—stem, scales, and flowers all being of a dingy brown hue; so that its first appearance is that of a withered stem, till on examination we observe its succulent nature. Its sombre aspect and leafless condition, so like that of some of our native parasitic plants, as well as its growth among the fallen leaves around the trunks of trees, led to the opinion that this Orchid was parasitical in habit. Mr. Bowman, who examined the plant with much care, says: "It has long been doubted whether it is strictly parasitical. Whatever it may be in the earlier stages of its growth, it certainly is not so in its more advanced state. If it be carefully got up in a clod, and the soil afterwards washed from around it, the leaves (that is, the scaly appendages) of the central rootstock, or caudex, may be seen to terminate in a short curved spur, which tapers to a fine point, and evidently is not attached to any other vegetable. The cuticle of the stem and its bracts have no perspiring pores." It is really a saprophyte, like coral-root, feeding upon decaying leaves.

This plant received its old name of Bird's-nest from the short, thick, fleshy entangling fibres of its roots, which might remind us of the sticks used by some of our larger birds in the framework of their nests. The young plants

1. COMMON TWAYBLADE. Listera ovata.
2. HEART LEAVED T. L. cordata.
3. COMMON BIRDS-NEST. L. nidus-avis.
4. FRAGRANT LADYS TRESSES. Neottia spiralis.
5. SUMMER L. T. N. æstivalis.
6. DROOPING L. T. N. cernua.
7. CREEPING GOODYERA. Goodyera repens.

are produced from the extremities of these fibres. The Bird's-nest Orchis flowers in June; its thick fleshy stem is about a foot high, and the scales which sheath it are very succulent; the blossoms grow in a long spike. It should be sought in dark beech-woods. This plant is the original *Neóttia* of Linnæus, and many botanists separate it into a genus of that name, the following genus being by them termed *Spiranthes*.

6. Lady's Tresses (*Neóttia*).

1. **Fragrant Lady's Tresses** (*N. spirális*).—Root-leaves oblong, stem-leaves like bracts; spike twisted, the flowers all pointing one way; root-stock formed of two or three tubers about as large as a hazel-nut. The spiral arrangement of the blossoms of this pretty and delicate flower readily distinguishes this and the next species from our other Orchids. The blossoms are greenish-white, the upper sepal and the two lateral petals are combined, and the lip is longer than the rest of the flower, which is altogether somewhat bell-shaped in form. The spike sometimes twists from right to left, but at others in the opposite direction. The stem, which is from four to six inches high, is of a pale, almost sea-green hue, and the stem-leaves are of the same tint, and slightly downy. The flowers have a sweet though not powerful fragrance, the odour increasing in the evening. The leaves around the base are of a bright glossy green, but they do not appear till the flowers are fully blown. At the time when the flower raises its spike above the decayed leaves of the last autumn, a new tuft of leaves springs from just above the root, to prepare for the following season. The Rev. C. A. Johns remarks that the foliage is so tenacious of life that it continues to unfold even while subjected to the pressure made by the blotting-paper in the process of drying. The plant is often called the Autumnal Lady's Tresses, as it flowers in September and October. It is not unfrequent on dry pastures. Also known as *Spiranthes autumnalis*.

2. **Summer Lady's Tresses** (*N. æstivális*).—Root-leaves oblong-lanceolate, those of the stem lanceolate and narrow; spike twisted; tubers cylindrical. This is a very rare plant of bogs and marshes. Its recorded places of growth are a bog between Lyndhurst and Christchurch, in the New Forest, Hants, and St. Ouen's Pond, Jersey. It has also been found in Wyre Forest, Worcestershire. The ovaries on the flower-stalks are placed regularly one above another, somewhat resembling plaited tresses; and both this and the last species are suggestive of various modes of hair-dressing used by ladies in olden times, and rendered familiar to us by their portraits. The flowers are greenish-white, in a lax spiral spike, and have a longer lip than those of the last species.

3. **Drooping Lady's Tresses** (*N. cérnua*).—Root-leaves linear-lanceolate, stem-leaves lanceolate, somewhat triangular; bracts shorter than the flower; spike crowded, 3-ranked; sepals and petals equal; lip blunt, with shining tubercles at its base; tubers long, cylindrical. This species is the rarest of all European Orchids. It was not known to be a British plant until the year 1810, when it was discovered by Mr. Drummond, at Castletown Berehaven, County Cork, in Ireland. It then disappeared until the year 1841, when it was rediscovered on the same spot, and sent to Dr. Woods,

of Cork. It is the only known European locality for the plant, though it is also found in Kamtschatka. The fragrant greenish-white flowers grow, in August and September, on a somewhat short stem, forming a spike about half an inch long. The plant is by some writers called *Spiranthes gemmípara*, and *S. romanzoviána*.

7. Goodyer's Orchis (*Goodyéra*).

Creeping Goodyera (*G. répens*).—Lower leaves egg-shaped and stalked; sepals, petals, and lip egg-shaped, lanceolate; rootstock creeping. This rare plant is found in pine forests at the north of this kingdom, especially in the Scottish Highlands. Its stem is about six inches high; its leaves are mostly from the root; and it has narrow leaf-like bracts. The small cream-white flowers grow during August, in a spiral spike. The whole of the upper part of the plant is covered with minute glands. Mr. Loudon remarks of its creeping roots, that unlike those of most Orchids, the plant may be increased by division.

8. Gmelin's Coral-root (*Epipogium*).

Gmelin's Coral-root (*E. gmelini*).—Lip 3-lobed, somewhat concave, continued backwards as a short, stout spur; the centre whitish, with rows of red glands. Sepals and petals somewhat spreading. Rootstock of fleshy, branched fibres similar to those of *Corallorhiza*. This is an exceedingly rare saprophyte, whose sole British locality is Tedstone Delamere, in Herefordshire. Its pale yellow-brown stem is about six inches high, its leaves reduced to one or two small sheathing scales, above which are the 2 to 6 pale yellow flowers on their short thick ovaries. The sepals and petals are narrow lance-shaped, with turned-in edges; and the lip, which is uppermost, has small lateral lobes. The position of the lip is due to the fact that the ovary is not twisted. The plant grows among dead leaves, and flowers in August.

9. Orchis (*Órchis*).

1. **Green-winged Meadow Orchis** (*O. mório*).—Lip 3-lobed, slightly crenate, middle lobe margined; sepals and petals blunt, ascending, hooded; spur blunt, rather shorter than the germen; tubers two, globular, undivided. This is not an infrequent plant of the English or Irish meadow, during the month of June. It grows among the grass, either hiding amidst its blades or rising above them, varying in height from half a foot to a foot. The flowers are few, forming a loose spike, and may be distinguished by their dull purple sepals, which are marked with green veins, and curved upwards so as to form a kind of helmet over the rest of the blossom. The lip is purple, paler in the middle, and marked with purple spots. The leaves are smaller than those of most members of the genus, and are not spotted.

2. **Early Purple Orchis** (*O. máscula*).—Lip 3-lobed, somewhat crenate, the middle lobe margined; sepals acute, the two lateral ones turning upwards; petals converging; spur blunt, rather longer than the ovary; tubers two, egg-shaped. This is the commonest of our native Orchises, and all who delight to roam in green meadow or leafy woodland, during May, have

1. GREEN-WINGED MEADOW ORCHIS
   Orchis morio
2. EARLY PURPLE O.
   O. mascula
3. DWARF DARK-WINGED O.
   O. ustulata
4. GREAT BROWN-WINGED O.
   O. fusca

mingled it with their spring flowers. Speaking of this plant, Bishop Mant says:

"In that broad field of springing grass,
First of his lip and hornèd class,
The early-flowering Orchis show'd
His smooth and spotted leaves, and glow'd
With spiky stalk elate, and head
Of spiral blossoms purple red."

The succulent stem is about a foot high, generally more slender than that of the last species, and tinged more or less with purple. The upper leaves mostly clasp the stem; the lower ones are oval-lanceolate, of a bright glossy green, generally spotted with dark purple. The flowers form a loose spike, each flower rising from a somewhat twisted ovary, and having a long spur turning upwards. Their colour is usually of a rich reddish-purple, but it is sometimes very pale, the centre of the lip whitish at the base, spotted, and downy, and the sepals are without veins. The flowers are in the daytime slightly fragrant; but in the evening the odour increases, and becomes, if exhaled in an apartment, most powerfully disagreeable, and reminiscent of cats.

All the European species of the genus Orchis have underground stems in the form of tubers, sometimes entire, and sometimes divided, and furnished with thick fleshy fibres. One of these tubers is destined to outlive the other; and on examination, we find one of them plump and vigorous, while the other is wrinkled and withering, about to be succeeded, however, by a new one on the opposite side. The plump knob is, in fact, an offset of the other, and has a new white bud rising on the top of it, from which the stem of next year is destined to emerge. In consequence of this mode of growth, the actual position of the Orchis plant is changed about half an inch every year; for the new tuber invariably takes its origin from a point in the solid one exactly opposite to the decayed one, and thus—

"The Orchis takes
Its annual step across the earth;"

and it will be found, in the course of a dozen years, to have moved several inches from its original station.

The roots of this and the Green-winged Meadow Orchis furnish the substance called "salep," which was long imported from Turkey and other parts of the Levant, until it was discovered that our native plants could supply it. Salep is little used now in this country; but, less than a century since, the Saloop-house was much frequented, and the substance was a favourite repast of porters, coal-heavers, and other hard-working men. It is said to contain more nutritious matter, in proportion to its bulk, than any other known root, and an ounce of salep was considered to afford support to a man for a day; hence, those who travel in uninhabited countries have greatly prized so portable a vegetable food. It is still much used in Eastern countries; and a friend of the author's, long resident in India, remarks in a letter: "Many a good basin of the thick salab gruel, prepared from the ground, dried root of an Indian Orchis, have I swallowed, and found highly nutritious. It is called in Hindustani, *Salab-ee-misree;* hence, I suppose,

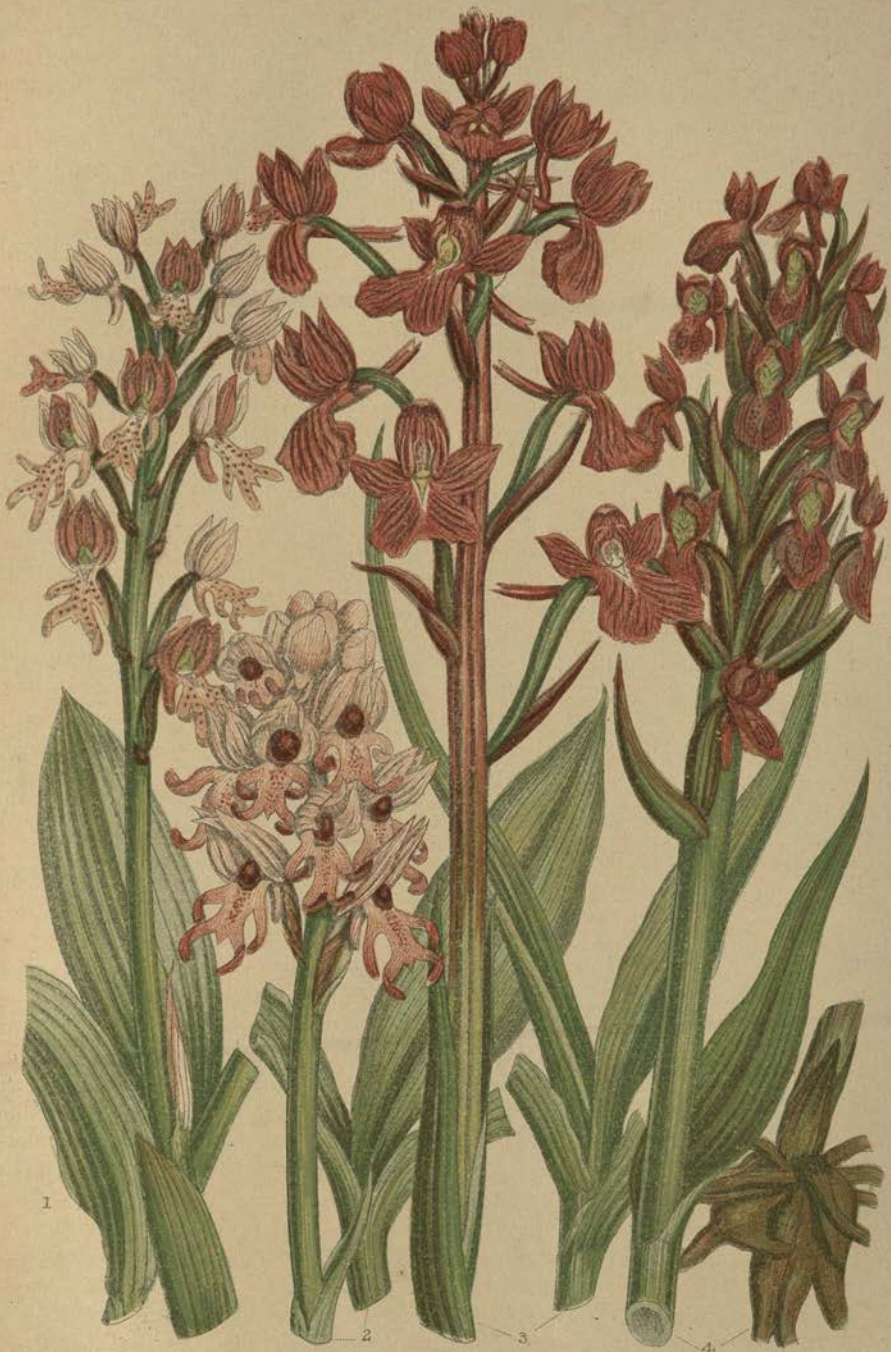
Salep or Saloop." Forskhall says that the plant which furnishes this substance is in Persia called *Sahleb*. The farinaceous powder is prepared by washing the tubers, and drying them in an oven; salep, made some years since in Gloucestershire from the early Purple Orchis, was found to be quite equal to what was imported. The tuber should be taken up when the plant is in seed, and the stalk about to fall from it. It is then at its full size, and about as large as a pigeon's egg.

With the exception of salep, our British species of Orchis yield no useful substance. The showy foreign kinds are scarcely more productive. A kind of cement or glue is obtained from the roots of some exotic species; and the vanilla used in flavouring chocolate and other sweetmeats is the dried fruit of the *Vanilla planifolia*.

3. **Dwarf Dark-winged Orchis** (*O. ustulata*).—Sepals dark purple, forming a helmet including the two small petals; lip white, with raised purple dots; spur and bracts about half as long as the ovary; tubers egg-shaped. This Orchis is readily distinguished by its low growth, and dark brownish-purple colour, in some specimens so dark that, before the flowers are fully expanded, they look as if they had been blackened by a scorching flame. The spike is oblong, the flowers small, and usually more crowded than in the specimen represented by the plate. They expand in May and June, on a stem about four inches high. The leaves are deep green. The plant grows on chalky hills and pastures, and is not one of our common species; though it may be found plentifully in some localities. It has a faint and delicate odour, like that of boiled cherries.

4. **Great Brown-winged Orchis** (*O. fusca*).—Lip 3-lobed, with raised rough dark-red spots, the lateral lobes linear-oblong, the middle one large, inversely heart-shaped, crenate, with an intermediate tooth; sepals rather blunt, hooded, and including the petals; spur blunt, half as long as the ovary; tubers egg-shaped. This, which is the largest and tallest of our Orchids, is commonly one to three feet high. In Kent and Sussex, which from the chalky soil are famous for Orchids, this plant is, in May, often very conspicuous in the woodlands and on the bushy hill; and it seems to be peculiar to those counties. It is often carried into the towns in baskets for sale, mingling among green Tway-blades, and dim brown Bird's-nests, and overhung by graceful ferns. Kentish country people call it the Lady Orchis; and the reader may see, by glancing at our plate, that though its form is not very suggestive of its name, yet that there exists some slight similarity in each blossom to a lady attired in wide-spread gown and close bonnet. The leaves are oblong, blunt, bright green, and glossy. The helmet is brownish-purple and variegated, and the lip of a paler hue. It is also known as *O. purpurea*.

5. **Military Orchis** (*O. militaris*).—Lip deeply 3-lobed, with rough raised points; the two side lobes linear-oblong, short; the middle lobe again divided into two slender segments, with an intermediate tooth; sepals hooded, including the two petals; spur blunt, about half as long as the ovary; bracts short; tubers egg-shaped. This plant is very similar to the last in the structure of its flowers, and is intermediate in this respect between that and the following species. It is much smaller than the Great Brown-winged



1. MILITARY ORCHIS.
   Orchis militaris.
2. MONKEY O.
   O. reploscanthos.
3. LAX-FLOWERED O.
   O. laxiflora.
4. MARSH O.
   O. latifolia.

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Orchis; the helmet is of a pale ash colour, the lip deep purple, white in the middle, and spotted. It occurs on chalky hills in Berkshire, chiefly about Reading; and also in Oxfordshire, Buckinghamshire, Kent, and Hertfordshire, flowering in May.

6. **Monkey Orchis** (*O. tephrosánthos*).—Lip 3-parted; the two side lobes long and narrow, the middle one deeply cleft with an intermediate tooth; sepals pointed, hooded, including the two petals; spur half as long as the ovary; bracts very small. This beautiful and curious Orchis is somewhat slender, and bears in May a spike of pale purple-spotted flowers, with a lip cut into deep segments of darker purple. Some botanists doubt if it is truly distinct from the last species. Sir J. D. Hooker regards it as a sub-species of the Military Orchis under Lamarck's name of *O. simia*. The chief difference consists in the more slender divisions of the lip and its more crimson tint. It is found on chalk hills in Oxfordshire, Berkshire, and Kent.

7. **Lax-flowered Orchis** (*O. laxiflóra*).—Lip 2 or 3-lobed; lateral lobes rounded in front, longer than the intermediate lobe, which is sometimes absent; spur stout, half as long as the ovary; lateral sepals turning backwards, middle one erect; petals hooded; tubers globose. This plant is found in wet grassy lands in Guernsey and Jersey, and on ballast heaps about Hartlepool. It is a handsome flower in May and June. Mr. Babington remarks, that it is allied to *O. mório*; but that plant has single-nerved bracts, and all the segments of its perianth, except the lip, are hooded, the short spur also affording a distinctive character. The stem is one to three feet high, the flowers of a bright red-purple, the leaves lanceolate or linear-lanceolate.

8. **Marsh Orchis** (*O. latifólia*).—Lip scarcely 3-lobed, its sides slightly turning under; sepals spreading, the two petals hooded; spur cylindrical, shorter than the ovary; bracts as long as the flower, sometimes longer; tubers palmate. A very pretty flower is the Marsh Orchis, and a very frequent one, too, on marshy meadows and damp grassy lands in June and July, growing among the rich drooping clusters of the waxy pink cross-leaved heath, and the green or pale and rosy-tinted bog mosses. It is a tall and somewhat slender plant, with a hollow stem about a foot high, and oblong, spotted leaves remarkably erect with flat tips. The flowers are sometimes of a pale pinkish hue, but oftener deep lilac or dull purple, the lip dotted and streaked with purple; while, on the sands of Barrie, they have been found perfectly white. The long bracts taper to a point. Also known as *O. palmata*.

There is a sub-species (*O. incarnata*) with lance-shaped, pointed leaves, broader at the base, unspotted, and with concave tips. This form has larger flowers. It has been found in Cornwall, Hampshire, and Wiltshire.

9. **Spotted Palmate Orchis** (*O. maculáta*).—Lip flat, 3-lobed; sepals spreading, the two petals hooded; spur as long as or shorter than the ovary; bracts varying much in length, sometimes as long as the flower; upper leaves linear-lanceolate, lower ones mostly blunt, and spotted with purple; tubers palmate. The delicate lilac, or occasionally white, flowers of this Orchis grow on a solid stem about a foot high in June and July, forming at first a

short spike, which afterwards lengthens. The flowers are streaked, and spotted more or less with purple, especially the lip, which is deeply lobed, having the side-lobes rounded, and the middle lobe longest. It grows in abundance on heaths and pastures where the soil is moist. Its leaves are slender and distant.

10. **Pyramidal Orchis** (*O. pyramidâlis*).—Lip with three equal lobes and two tubercles at the base above; lobes oblong, blunt as if cut off; sepals spreading, pointed; spur very slender and longer than the ovary; leaves linear-lanceolate, tapering; tubers globose. This lovely Orchis is not infrequent on the chalky soils of various parts of England, growing among grass. Many a fine specimen may be gathered from the cliffs of Dover, while some grow there on spots inaccessible even to the most adventurous footsteps; but, gleaming among the verdure, are conspicuous afar off in their tint of rich crimson purple— so rich that the artist despairs of imitating it on paper. The stem is from twelve to eighteen inches high, bearing, in July, a short, broadly-conical cluster of crowded flowers, spirally arranged, the spike becoming longer with age. The bulging protuberance of the lip, and the long slender spur, are marked features of this Orchis. The leaves sheathe the stem, about five or six growing from the root. The flowers are sometimes white, and in some rare instances double; and the plant has an odour which to some is pleasing, though we cannot praise it. Douglas Allport, in some verses on this flower, tells of the power of the gathered blossom to recall the scenes amid which it once grew:—

"Thus, when within my sunless room,
Heart-sick and worn with Mammon's leaven,
Thy pyramids of purple bloom
Blush through its loneliness and gloom,
The spirit bursts its living tomb,
And basks beneath the open heaven.

"There, as on some green knoll reclined,
The summer landscape round me glowing,
While gentle ardours fill the mind,
I leave the unquiet world behind,
And hear a voice in every wind
Around my fervid temples blowing.

"Thus, through this woodside plant, the mind
Sweeps the vast range of things created,
And longs, and pants, and fails to find
In earth, and ocean, sky, combined,
Those joys, unfailing and refined,
By which its famine may be sated."

11. **Lizard Orchis** (*O. hircina*).—Lip 3-parted, downy; segments narrow, middle one very long and curled like a tendril, lateral ones much shorter; spur very short. This plant, always very rare on the bushy chalky hills of Kent and Suffolk and Surrey, has not been seen recently by any botanist. It flowers in July, and is described as much resembling a lizard in shape; its calyx green, spotted with purple, its lip purplish-white and spotted at the base, the middle segment more than an inch long, green, and the smell of its flowers as most disgusting and goat-like.

Most of the species in this genus are remarkably adapted for cross-fertilization by insects with long tongues, chiefly bees and flies. They

1 SPOTTED PALMATE ORCHIS.
Orchis maculata.

2 PYRAMIDAL O.
O. pyramidalis.

3 LIZARD O.
O. hircina.

4 FRAGRANT GYMNADENIA.
Gymnadenia conopsea.

produce no honey, but the insects are able to suck a presumably sweet juice through the inner lining of the spur. To reach this their heads must be pressed against the viscid base of the pollinia, which are thus glued to their heads and drawn out of their pouches when the insect retires. The pollinia then droop to some extent, and assume such position as brings them in contact with the stigmas of flowers subsequently visited.

10. Gymnadenia (*Gymnadénia*).

Fragrant Orchis (*Gymnadénia conópsea*).—Lip 3-lobed; lobes nearly equal, entire, blunt, free from spots; the two lateral sepals spreading; the two lateral petals converging; spur slender, twice as long as the ovary; tubers egg-shaped. Several of our native Orchids have a pleasant and delicate fragrance; but none in this respect equals the Gymnadenia either in power or sweetness. The scent is almost too much for a room, though delicious when borne on the midsummer breeze from the hundreds of blossoms which sometimes stud the dry grassy plains during June and the two following months. It is especially common in the mountainous parts of Scotland; but it grows, too, on many hill-sides of England, whence we may gather a large and fragrant nosegay of its flowers from meadows, on which they stand in conspicuous beauty by thousands. The flowers are of a deep rose-colour, rarely white, and still more rarely spotted with deeper red. It is found mostly on dry soils, often in company with the Pyramidal Orchis; but Mr. Loudon remarks that it grows sometimes with *Epipactis palustris* on bogs, where the foot can hardly tread. The stem is about a foot high, the leaves oblong-lanceolate, and keeled, and the flowers are arranged on a spike somewhat dense at first, afterwards more lax. The flowers are distinctly broader than long. Bentham unites this genus with the next.

11. Habenaria, Butterfly Orchis (*Habenária*).

1. **Green Habenaria** (*H. víridis*).—Spur 2-lobed, very short; lip 2-cleft, linear, with an intermediate tooth; sepals and petals forming a hood; bracts much longer than the flower; tubers palmate. This small Orchis is not uncommon on dry pastures—a solitary specimen often growing on a spot far from any other, unlike most of our Orchids, which generally grow socially. Its stem is six or eight inches high, the helmet of the flower green, and the lip greenish-brown. The blossoms form a lax spike from June to August. The lower leaves are egg-shaped and blunt; and the stem is from six to twelve inches high. The plant is sometimes called, though with little reason, Frog Orchis.

2. **Small White Habenaria** (*H. albída*).—Lip 3-lobed; lobes acute, middle one longest and broadest; sepals and petals nearly equal, converging; spur blunt, shorter than the ovary; rootstock of fleshy fibres. This is a smaller and prettier Orchis than the last, bearing a long spike of little yellowish-white fragrant flowers, during June, July, and August. The lower leaves are oblong and blunt, the upper lanceolate and acute. The stem is from six to twelve inches high. This Orchis is not infrequent on mountain pastures, in Sussex, Wales, and to the north of York and Lancaster.

3. **Entire Habenaria** (*H. intacta*).—Lip 3-lobed, projecting, the lateral lobes short and slender, petals pointed; sepals darker than the pinkish petal, and spotted lip; spur somewhat globose; tubers egg-shaped, entire. This rare plant is very similar in general habit to *H. albida*, but it is smaller, ranging from four to ten inches in height. The three or four oblong—often spotted—leaves are arranged in a rosette. The flowers are arranged in a dense-flowered spike, that is sometimes twisted, and they open in June. The plant, which is found on limestone pastures in Mayo and Galway only, has been a veritable shuttlecock for the systematic botanists, Sir Joseph Hooker remarking that it has been referred to no less than seven genera in succession.

4. **Lesser Butterfly Orchis** (*H. bifólia*).—Spur twice as long as the ovary; petals converging, blunt; lip linear, entire, blunt; leaves generally two, elliptical, tubers lobed. This, though a singular and lovely flower, would scarcely suggest the idea of a broad-winged butterfly, though it might remind us of a smaller winged insect. The stem, which is slender and angular, is about a foot high, and the loose spike of white or greenish-white blossoms is about four or five inches long, expanding from June to August. The corollas are remarkable for their length of spur, and the strap-shaped lower lip. The spur is so long and slender that bees find it not worth their while to visit the flowers, which can only be fertilized by butterflies or moths. Its white hue suggests, in connection with the foregoing fact, that night-flying moths alone are wanted, and this is made the more evident by the flower becoming fragrant at night only. The two broad leaves are bright green; the bracts are narrow and lanceolate. The plant is common in moist woods, and on heaths.

5. **Great Butterfly Orchis** (*H. chlorántha*).—Spur twice as long as the ovary, expanded at tip and decurved; petals converging, blunt, larger and proportionately broader than in *H. bifolia;* lip linear, entire, blunt; leaves elliptical, and usually two; tubers lobed. This plant is very similar to the last; and many botanists doubt if it is truly distinct from it. It is both taller and stouter than the preceding, and its flowers much larger and more beautiful, expanding at the same season, or slightly later. Its stem is usually a foot or a foot and a half high; but Mr. F. A. Paley found a specimen measuring two feet, in a wood near Clifton; and we have observed it, in copses about Waldershare in Kent, attaining such luxuriance that its white flowers could be seen by moonlight, growing among bushes and ferns, as we passed the high road by the wood. The spike is sometimes lax, but is in some specimens crowded. It is found occasionally on dry pastures and heaths, but more frequently in moist woods and thickets. Hooker regards it as a sub-species of *H. bifolia.*

12. Man Orchis (*Aceras*).

Green Man Orchis (*A. anthropóphora*).—Lip 3-parted; segments linear and very narrow, middle one 2-cleft; sepals acute, hooded, including the two small linear blunt petals; tubers egg-shaped. This is a local plant, that occurs only in dry chalky wooded or bushy places between Kent, Surrey, Sussex, and York. It bears in June, on a stem about a foot high, a long

1 GREEN HABENARIA.
Habenaria viridis

2 SMALL WHITE H.
H. albida.

3 LESSER BUTTERFLY ORCHIS.
H. bifolia.

4 GREAT BUTTERFLY ORCHIS.
H. chlorantha.

5 GREEN MAN O.
Aceras anthropophora.

6 GREEN MUSK O.
Herminium monorchis.

Pl. 221.

lax spike of yellowish-green flowers, which have a very sweet odour by day, but which, like several green flowers, have a stronger scent in the evening, though we cannot describe it as agreeable at that time. The lip of the blossom has its middle lobe deeply cleft, and margined with purplish-brown; but occasionally the lip is crimson, and the green helmet is often marked with lines of this hue. We have often witnessed the disappointment of those who looked for the first time on this plant, and could trace little of that similitude to which it owes its familiar name. On observing it closely, however, one may detect some resemblance to the human figure, with the head enclosed in a casque; but for that likeness to animated nature which some of the Orchids exhibit, we must, among our British flowers, look to the genus Ophrys. There is no spur to this flower.

13. Musk Orchis (*Herminium*).

Green Musk Orchis (*H. monórchis*).—Lip 3-lobed, middle lobe the longest; sepals egg-shaped, shorter than the petals; root-leaves usually two, lanceolate-oblong, a small leaf on the stem; tubers egg-shaped, far asunder at the end of thick fibres. This little Orchis bears a slender spike of greenish flowers in June and July. The stem is from five to ten inches in height, and very slender. It grows on chalky pastures south of Cambridge, Norfolk, and Gloucester. The minute flowers produce neither spur nor honey, but at night they give out the odour of musk, and this attracts a large number of small fry in the way of tiny beetles and flies which fertilize the flowers.

14. Ophrys (*Óphrys*).

1. **Bee Orchis** (*O. apífera*).—Lip swollen, 3-cleft, the intermediate lobe recurved at the margin, with a long awl-shaped reflexed appendage in the notch; petals oblong, bluntish, downy; tubers egg-shaped. Anyone who even glanced at this pretty wild flower might imagine a large velvety bee was sitting on it. On many chalky fields south of Durham and Lancaster it is not infrequent; also in the middle and south of Ireland, and in the Channel Islands. The stem is about a foot high, bearing a few distant flowers in June and July. The sepals, which look like delicate wings, are either greenish-white or of a pale or deeper lilac tint; and the little oblong petals are of the same hue; while the lip, which represents the body of the insect, is brown, variegated with yellow, and soft and velvety. The author has found it near Dover with snow-white blossoms, but fears to indicate the spot, lest some ruthless collector should extirpate it. Linnæus named this species *O. insectífera:* and certainly this, the Fly Orchis, and in a less degree the Spider Orchis, bear a resemblance to the insect race. But many foreign Orchids exhibit similarities, no less striking, to butterflies, spiders, frogs, and other living creatures. The purpose of this singular resemblance is by no means clear. It has been suggested that it was to attract bees, and also to drive them away. It would certainly appear that the visits of bees are not required, for not only is there no honey and no spur, but the pollinia are not meant to be removed; they are on long stalks, and ultimately fall forward upon the stigma, thus securing self-fertilization.

2. **Late Spider Orchis** (*O. arachnítes*).—Lip somewhat swollen, with

four shallow marginal lobes, and a terminal flat heart-shaped appendage, which is always straight; sepals coloured; petals angular, downy. This is a rare plant of the chalky downs in Kent and Surrey. The sepals are pinkish, a little tinged with purple, and with a green vein down the middle; the velvet lip is dark purple, variegated with yellow or green, and the appendage of light green. The pollinia are said to differ from those of the Bee Orchis in having stiffer footstalks and not falling over on the stigma. It appears to be only a sub-species of *O. apifera*.

3. **Spider Orchis** (*O. aranifera*).—Lip swollen, scarcely 3-lobed; middle lobe without an appendage, or with a minute point or gland in the notch; petals narrow. In one form, the lip is lobed at the margin; and the petals are smooth. In the other, sometimes termed *O. fucifera*, the lip has no lobes, but a spreading wavy margin, and the petals are downy. This Orchis is not infrequent on chalky pastures from Kent to Dorset, and northward to Northampton and Suffolk. Its sepals are green, and its lip of a deep brown hue and hairy, having greenish, or more often dull yellow, lines, frequently resembling the Greek letter Π. It is a low-growing Orchis, rarely half a foot high, the flowers, which are few in number—often not more than three on a plant—reminding one of spiders. The flowers appear in April, May, and June.

4. **Fly Orchis** (*O. muscifera*).—Lip oblong, 3-cleft, with a broad pale spot in the centre; middle lobe long and 2-cleft; petals thread-like; tubers egg-shaped. This common and pretty Orchis grows on downs and copses on chalk and limestone from Durham and Westmoreland south as far as Kent and Somerset; also in Mid-Ireland and North Kilkenny. Its flowers are about the size of the common house-fly, though often larger, and its resemblance to that insect is very striking. The green sepals are like wings, and the lateral petals are very like the antennæ of insects; while the brownish-purple lip, with a pale blue, somewhat square spot in its centre, resembles the body of the fly. The little flowers, about nine or ten in number, in luxuriant specimens, are scattered over the upper half of a slender stem, about a foot high, and look as if the insects were pausing there to rest on the stalk. Parkinson says of this plant:—"The neather parte of the flie is black, with a list of ashe colour crossing the backe, with a show of legges, hanging at it; the naturall flie seemeth so to be in love with it, that you shall seldome come in the heate of the daie but you shall find one sitting close thereon." The author of these pages, however, who has been from childhood much accustomed to watch this flower, has not observed this, though the bees certainly seem attracted by the Bee Orchis.

[It has been conclusively shown since Miss Pratt wrote that flies *do* visit these flowers and fertilize them by pollinia brought from a flower previously visited. It is not probable that the fly is attracted by the superficial resemblance to one of its own class, but by the carrion colour, and by the beads of moisture which ooze from the surface of the lip. The dry and shining "eyes" of the floral counterfeit also resemble globules of liquid, and the fly licks them in that belief. In so doing, its head comes against the pollen gland, and the pollinia are detached wherewith to fertilize the next flowers visited.—ED.]

1. BEE ORCHIS
Ophrys apifera
2. LATE SPIDER O.
O. arachnites
3. SPIDER O.
O. aranifera
4. FLY O.
O. muscifera
5. COMMON LADYS SLIPPER.
Cypripedium calceolus

Bishop Mant thus alludes to some of these flowers. Comparing them with the Early Purple Orchis, he says:—

"And few of that most curious race,
Or those that rival them in grace,
Perhaps exceed; the Ophrys kind
In the advancing season join'd,
Stamp'd with their insect imagery,
Gnat, fly, and butterfly and bee,
To lure us in pursuit to rove
Through winding coombe, through shady grove."

15. LADY'S SLIPPER (*Cypripédium*).

Lady's Slipper (*C. calcéolus*).—Stem leafy; sepals and petals spreading; lip inflated, slightly compressed, and shorter than the sepals; rootstock creeping, not tuberous. Those who have ever seen this lovely and rare Orchis, cannot fail to regret that it is not a more common woodland flower. It is the most beautiful of European Orchids, and has a far larger blossom than any other of our native species. This is usually solitary, though two flowers sometimes grow together on the leafy downy stem, which is a foot or a foot and a half high. The sepals are an inch or an inch and a half long, and the petals are narrow, all being of a deep rich brown colour. The swollen lip, over an inch in length, is rich yellow, with a network of darker veins, and elegant slipper-like form. It flowers in May, and grows in some dense woods in Durham and Yorkshire, and other northern counties, but appears to be almost extinct. It is not only innocuous, but somewhat nutritious; and a decoction of its roots was recommended by Gmelin in cases of epilepsy; but Professor Burnett, remarking on this, says that their influence on the disease "is more than apocryphal." The French call the plant *Soulier de la Vierge*, or *Soulier de Notre Dame;* the Germans, *Venusschuh;* and the Portuguese, *Calcado de Nuessa Senhora.*

This species differs from all the other British Orchids in having two anthers; the others have each a single anther with two cells and two or more pollen masses. In this case the column, instead of being erect, curves over, and with its anthers almost fills the entrance to the bag-like lip. Attracted by the fragrance, small bees (*Andrena*) push in to partake of the honey they mistakenly suppose to be there. The incurved edges of the lip prevent return by the way they came, and they have to crawl out by the side of the column, first pressing against the stigma, then carrying off some pollen from one of the anthers.

Order LXXXIV. IRIDEÆ—IRIS TRIBE.

Perianth 6-parted; stamens, 3, rising from the base of the sepals; ovary inferior, 3-celled; style 1; stigmas 3, often petal-like; capsule 3-celled, 3-valved; seeds numerous. The order consists of perennial herbs, often with very handsome flowers, rising from a spathe or sheath, and having, except in Trichonema and Crocus, flat sword-shaped sheathing leaves. They are chiefly natives of warm and temperate climates.

1. IRIS.—Perianth with the three outer divisions longer and reflexed

stigmas 3, resembling petals, and covering the stamens. Name from *Iris*, "the rainbow," from the bright hues of the flowers.

2. CORN-FLAG (*Gladíolus*).—Perianth almost 2-lipped, with a short, curved tube; ovary short, 3-angled; style thread-like; stigmas broad; capsule leathery, seeds winged. Name from the Latin, *gladiolus*, a little sword, in allusion to the shape of the leaves.

3. TRICHONÉMA (*Trichonema*).—Perianth of equal spreading divisions; tube shorter than the limb; stigma deeply 3-cleft, its lobes 2-cleft, slender. Name from the Greek *thrix*, a hair, and *nema*, a filament.

4. BLUE-EYED GRASS (*Sisyrínchium*).—Perianth of equal divisions, spreading or half-erect; tube short; ovary short, 3-angled; style short, stigmas thread-like; capsule leathery, seeds sub-globose, hard. Name of doubtful origin.

5. CRÓCUS (*Crocus*).—Perianth of equal, nearly erect, divisions; tube very long; stigma 3-cleft, its lobes inversely wedge-shaped. Name from the Greek *krokos*, saffron, and that from *kroké*, a thread.

1. FLAG (*Íris*).

1. **Yellow Iris, or Flag** (*I. pseúd-ácorus*).—Leaves sword-shaped, sheathing; flower-stem round; perianth beardless, its inner segments shorter and more slender than the stigmas; rootstock thick, creeping. The Yellow Flag waves its delicate but showy flowers over many a stream, or rears them by its margin. It is among our most beautiful marsh plants, growing on a stem sometimes three feet high, amid the leaves which stand up around it like sharp green sword-blades. It is either of a full or pale yellow, flowering from May to August, amid the floral companions that Clare describes as attracting the country rambler:

"Some went searching by the wood,
Peeping 'neath the weaving thorn,
Where the pouch-lipp'd cuckoo-bud
From its snug retreat was torn;
Where the ragged-robin stood
With its piped stem streak'd with jet,
And the crow-flowers, golden hued,
Careless plenty easier met.

"Some with many an anxious pain,
Childish wishes to pursue,
From the pond-head gazed in vain,
On the Flag-flower's yellow hue;
Smiling in its safety there,
Sleeping o'er its shadow'd bloom,
While the flood's triumphing care
Crimpled round its guarded home."

During the autumnal months, the stout stems of this plant are made remarkable among the sedges, reed-mosses, and other water-plants, by the long bright-green 3-celled capsules, which droop down among the membranous withered sheaths that once surrounded the blossom. As two, three, or more of the Flag-flowers grow on one stem, so there are several of these seed-vessels crowded with large seeds, placed in regular rows; and the capsules are so heavy that they would break a less sturdy stem. They may be found growing three together, and more than three inches long. The capsule finally dries into a parchment-like substance; and the hard, flattened seeds,

looking as if cut out of a piece of deal, fall out into the waters. These seeds, when roasted, are said to be an excellent substitute for coffee; but when their horny covering is removed, they have an acrid taste. The large horizontal root, or rootstock, contains a farinaceous substance of a most acrid and bitter flavour; and a portion held between the teeth is said to cure toothache, and is probably of real service. "But above all," says Ettmuller, "which I have hitherto known, the root of the Iris lutea rubbed upon the tooth that is painful, or the root itself chewed in the mouth, in an instant, as if by a charm, drives away the pain of the teeth arising from what cause soever. He that communicated it to me affirmed that he had tried it forty times, at least, with like success. I myself also have tried it; and a great many others have done the same by my persuasion, and I hardly ever knew it to fail." Those suffering under so troublesome a malady would do well to follow the example with some caution; as, from our experience of its acridity, we should expect that a blister in the mouth would be likely to succeed such a use of the root. These rootstocks have also been used medicinally; but would require care. An ointment was formerly much esteemed, which was made by country people from the Flag-flowers; and the old herbalists, who said it was "under the dominion of the sun," distilled the whole herb, and applied it for inflammation of the eyes and eyelids. The root is powerfully astringent, and has been used in making ink; and Gerarde well describes it as showing, when cut, "the colour of raw fleshe." Some kind of preparation of the plant is still, we are told, applied in villages as a cosmetic; and this appears to have been of very old use. Mr. Albert Way gives a very interesting and learned note on this plant, in his edition of the Anglo-Latin Dictionary. This work has "Gladone herbe, gladiolus, accolus, iris." "The name Gladwyn," says the commentator, "now denotes the *Iris fœtidíssima;* but probably the more common species, *I. pseud-ácorus*, may be here intended. In Mr. Drummond's 'Wisdom of Macer,' it is said, 'Gladen is y-clepid in Englishe, *iris* in Latine, for his floure hath a colour like the rainbowe. Take the rootes of this erbe, and kyt hem in round gobetis, and ryfe hem upon a threde, so that none of hem touche other if thou wilt dry hem.' The virtues of this root are numerous, taken with wine, mead, or vinegar; the following is curious as a cosmetic: 'Do take ij parties of this poudre of gladen rotys, and the iij part of the pouder of ellebre, that some men clepen cloffynge, and medele both these poudres to-gider in honey. A plaster of this wole purge and clense the face of frekels, also it will resolve the pockys and whelkys of the face.' Elyot renders Xiphium, 'an herbe lyke the blade of a sworde, gladen;' it is also called Xyris; and Cotgrave gives 'Glayeul corne sedge, corn gladen, right gladen, gladen, gladen sword grasse.'" Our wild flower is still called Yellow Skeggs, in the north of England.

The roots of some species of Iris are very fragrant, and that of the Florentine Iris is the Sweet Orris root of commerce, so much used in tooth and hair powder, and formerly laid among clothes to keep them from moth. The roots of several kinds, too, are edible. Pallas mentions that those of *I. dichotoma* are eaten in Siberia, and those of *I. edulis* are common food among the Hottentots. These people call them *Oenkjes;* and as they have, according to Thunberg, no idea of the beginning or ending of a year, the

flowering and decay of the bulbous plants are the only signs of their almanacks which serve to indicate either the years of their age or the course of time.

2. **Stinking Iris** (*I. fœtidissima*).—Leaves sword-shaped; perianth beardless, its inner segments about as long as the stigmas; rootstock creeping. This species is not nearly so showy a flower as the Yellow Iris; for its sepals and petals are of a dull blue, or, in some rare instances, the petals are a dingy yellow. The plant has a singular odour; and while it is untouched, this is not disagreeable, reminding one of roasted meat—hence in some places it is known as "Roast-beef plant;" but if we break the stem or crush a leaf, its scent becomes extremely unpleasant. This Iris is generally a foot or a foot and a half high; and though a local plant, is common in the west and south-west of England, having a predilection for limestone. It is abundant in the woods and thickets of Devonshire, and grows in several parts of Kent. South of Durham it is believed to be native, but northward and in Ireland it has become naturalized. It bears its flowers from June to August, and the soft leaves are so acrid that their juice produces a most burning sensation on the tongue. These leaves, steeped in beer, are used by country people as medicine; and all parts of the plant were praised by the old herbalists, though, as one of them observes, seeing that a decoction of the plant "somewhat hurts the stomach," it should not be taken internally without honey. It was supposed to cure all disorders of the liver; and coughs, colds, and headache were believed to be speedily dismissed by its use; while gout and other painful diseases were to be relieved by an oil which was prepared with the plant, and termed *Oleum irinum*.

This and other species of Iris were from early times called "fleur de lis," or "flour de luce." Chaucer apparently refers to a white foreign species:

"His nekke was white as is the flour de lis."

Dr. Turner, in 1568, calls it "flour de lyce;" and Gerarde, "flower de luce;" reminding us of Shakspere's lines:

"Lilies of all kinds,
The flower-de-luce being one."

Several flowers were called lilies in those days, including both the Iris and the daffodil; and it is probable that "fleur de luce" was originally "fleur de Louis."

The Iris has an historic interest. Louis the Seventh of France adopted it as the emblem of his shield during the Crusades, and strewed it on the mantle of his son, when he caused him to be consecrated at Rheims. After the battle of Cressy, it was united with the arms of England. Gray refers to this:

"Great Edward with the lilies on his brow,
From haughty Gallia torn;"

and it remained emblazoned on the arms of this country till, on the union with Ireland, it yielded to the Shamrock. It is still the Lily of France; and it was from earliest ages considered, in Eastern countries, as a symbol of power. A fleur-de-lis, exactly like that of the emblem of the French monarchy, was found surmounting a sceptre on a monument of highest

1. YELLOW WATER IRIS.
   Iris pseud-acorus.
2. STINKING I.
   I. fœtidissima.
3. COLUMNAS TRICHONEMA.
   Trichonema columnæ.
4. PERPLE SPRING CROCUS.
   Crocus vernus.
5. LEAST SPRING C.
   C. minimus.
6. GOLDEN C.
   C. aureus.
7. SAFFRON C.
   C. sativus.
8. NAKED FLOWERING C.
   C. nudiflorus.

antiquity at Dendera, in the heart of Egypt. M. Sonnini remarks: "Herodotus and Strabo relate that the kings of Babylon formerly bore the fleur-de-lis at the extremity of their sceptre." Montfaucon also speaks of that of David, found in the miniature of an engraved manuscript of the tenth century, which is surmounted by a fleur-de-lis. It is evident that the ornament called the "lis" was not a symbol peculiar to the crown of France; and it is not surprising that it composed a part of those which were employed in the mysterious representations of antique Egypt, since it was in former times the mark of power with some sovereigns of the country, or of some adjacent sovereignties. The Iris was placed on the brow of the Sphinx; and the ancients regarded the flower as the emblem of eloquence.

The stigma of the Iris flower is not only at some distance from the anther, but being separated from it by a membrane, the pollen could not reach its destination but for the aid of insects. The humble-bee seems the chief operator in effecting this; and in order to get at the nectary, the insect pushes itself in close to the stigma and deposits pollen it may have brought from another Flag, then rubs against the anther, brushes off the pollen with its hairy back, and proceeds to enjoy the nectar in the lower part of the flower. Afterwards it crawls out at the side of the flower below the anther, and so takes pollen away to the next flower. There is one form of flower in which the stigma is much closer to the sepal, and this seems an adaptation to the smaller size of a long-tongued fly (*Rhingia*) that is very assiduous in its attentions to these blossoms.

The seeds of this Iris are very beautiful in winter, when their capsule shrivels and displays them in all the lustre of brilliant scarlet. The seeds are numerous, round, and most powerfully acrid.

2. Corn-Flag (*Gladiolus*).

Common Corn-Flag (*G. communis*).—Leaves sword-shaped, about half an inch broad and eight inches long, glaucous; scape two or three feet long bearing spike of from 4 to 8 flowers, which are arranged all on one side (*secund*), in lance-shaped spathes; flowers somewhat bell-shaped, crimson-purple, the three lower segments paler, strongly veined with red-purple; rootstock a small corm; seeds with a narrow wing. This rare species occurs in Britain only in open spaces in the New Forest and in the Isle of Wight, flowering in June and July.

3. Trichonema (*Trichonéma*).

Columna's Trichonema (*T. columnæ*).—Stalk single-flowered, slightly drooping; leaves thread-like, flattened, furrowed, and bending backwards; spathe longer than the tube of the corolla; stigmas 2-cleft; rootstock a corm. This is a rare plant, growing only on a sandy pasture called the Warren, at Dawlish, and on the grassy hillocks of Jersey and Guernsey. Its flower scapes are about four inches high, and the flowers expand in March and April. These flowers are greenish externally, but within they are whitish veined with purple, and yellow at the base. It is in some respects similar to the iris, in some rather resembling the crocus; and Dawlish is thought to be probably its most northern locality, as it is common as near as Western

France, whence it ranges through Southern Europe to North Africa. It is also known as *Romulea columnæ*.

4. Blue-eyed Grass (*Sisyrínchium*).

Slender-leaved Blue-eyed Grass (*S. angustifolium*).—Flowers in umbels of three or four, with somewhat erect lance-shaped bracts, borne on a flattened two-edged scape; leaves sword-shaped, sheathing, one-sixth of an inch wide; rootstock of stiff fibres. This plant occurs with us only in the bogs of Kerry and Galway, and is otherwise known only as a native of North America. The flowers, which are about two-thirds of an inch across, are coloured blue on the inside only. They appear in July and August, and are succeeded by somewhat globose leathery capsules.

5. Crocus (*Crócus*).

1. **Purple Spring Crocus** (*C. vérnus*).—Leaves appearing with the flowers; spathe simple; throat of the corolla fringed; stigmas shortly 3-cleft; corm clothed with netted fibres. The flowers are either purple or white, with pale yellow anthers and toothed stigmas of a deep orange tint. This beautiful Crocus is very abundant about Nottingham, being most ornamental to the grassy meadows. It is also found at Mendham in Suffolk, at Inkpen, Berks, and in parts of Middlesex. It has now been so long naturalized, that it is regarded as one of our wild flowers, but it is not indigenous. It is said to have been introduced, at Nottingham, some centuries since, by the Dutch. It now also empurples several meadows near Ludlow in Shropshire; but these are believed to be the site of some old gardens. It is the *Safran printanier* of the French gardens.

2. **Least Purple Crocus** (*C. mínimus*).—Flower solitary, appearing before the leaves; spathe double; stigma erect, longer than the stamens; corm with a membranous coat. This species, introduced from Corsica early in the seventeenth century, is found on the site of an old garden in the park at Barton, in Suffolk, but is not even naturalized. The flowers are of pale lilac, striped with yellow and purple.

3. **Golden Crocus** (*C. aúreus*).—Leaves and flowers appearing at the same time; spathe simple; stigma shorter than the stamens; segments of the corolla spreading and bending backward; corm coated with compact fibres. This beautiful little Crocus is found with the last species, and, like it, is the outcast of gardens. It flowers in March, its leaves appearing at the same time. Several beautiful species were, several centuries since, brought into this kingdom from Greece and the countries of the south of Europe, where, as Homer wrote—

> "The flaming Crocus made the mountain glow."

4. **Saffron Crocus** (*C. satívus*).—Flowers appearing before the leaves; spathe double; stigma 3-cleft, hanging out of the flower; corm clothed with slender fibres. This beautiful purple Crocus differs from all the preceding species, in having aromatic stigmas which have a bitter flavour. These deep orange-coloured stigmas, when dried, constitute the saffron so largely used in ancient cookery, and still so favourite a carminative in Eastern lands. The Crocus

producing it can hardly be called a naturalized, and is certainly not a truly wild flower of Britain; and it occurs chiefly in the meadows about Saffron Walden in Essex. This town received its name from the culture there of this plant. It is believed to have been introduced to Walden in the time of Edward III.; and to this day it is planted in the fields of the neighbourhood, though far less extensively than in former times. In Norden's "Description of Essex," which was dedicated to Cecil, Lord Burleigh, and which has been reprinted by the Camden Society, we find the author remarking: "About the town of Walden groweth great stores of saffron, whose nature in yielding her fruit is verie strange, and bindeth the labourer to great travaile and diligence; and yet, at length, yealdeth no small advantage to recomforte him agayne." He adds, that the "towne standeth muche upon saffron, whereof much might be spoken concerning the secrets of the nature thereof." In the present time, saffron is in this country used chiefly as a colouring agent, though it is one of the plants prescribed by the homœopathic physician; but in the sixteenth and seventeenth centuries it was considered a remedy for innumerable complaints. Lord Bacon told how the syrups of dried roses, saffron, and apples were useful to "procure quiet sleep," and recommends that "some pills, or a small draught of these things, should be used familiarly." "It is," says an old herbalist, referring to saffron, "an herb of the Sun, and under the Lion, and therefore you need not demand a reason why it strengthens the heart so exceedingly. Let not above ten grains be given at one time, for the Sun, which is the fountain of light, may dazzle the eyes, and make them blind; a cordial being taken in an immoderate quantity, hurts the heart instead of helping it." The old physician was apparently right; for saffron has narcotic properties, when taken too largely, and is said to blister the skin, and to cause headache, blindness, and delirium. Dr. Hamilton quotes Borellus as affirming that headache and debility were produced by remaining some time in a room where there was much saffron; other medical writers say that it inclines persons to apoplexy; and a German medical writer records an instance in which the vapour of saffron proved fatal to a man who inhaled it. It is still a drug in high repute in Asiatic countries; and its Arabic name, *Z'afaran*, and the Moorish terms, *Azafran* and *Safra*, seem to point to its Eastern origin; while it is called by very similar names throughout Europe. Old tradition tells that a pilgrim, wishing to benefit his native country, brought the root hither, concealed in the hollow of his palmer's staff; "for if," says Hakluyt, "he had been taken, by the law of the country from whence he came, he had died for the fact."

We find saffron referred to in the Song of Solomon as a valuable product; and a dish called by Apicius, Juscellum, and by our Saxon ancestors Jusselle, is said by Mr. Albert Way to have been a compound of eggs and grated bread with saffron and sage. In ancient Greece and Rome, as in later years in this land, it appeared continually in the dishes of luxury. In the "Forme of Cury," of the time of Richard III., in the "Northumberland Household Book," and other old records, it receives mention. Shakspere tells of "saffron to colour the warden pies;" and many a pen of those times describes its uses in "Lent soups," sauces, and dishes; while one says, "without saffron we cannot have well-cooked peas." The oldest work on diet, which has been

ascribed to Apicius, represents, according to Beckmann, that saffron was employed as a perfume; and modern travellers describe it as still so used in the East. In Cornwall it is very largely and generally used as a colouring and flavouring for cakes and buns, and no tea-table is considered furnished without saffron cake. To most visitors from other counties the flavour is distinctly objectionable.

Saffron is necessarily a costly drug; for as the stigma only of the Crocus should be used in making it, great labour is incurred. It is often adulterated with the florets of the safflower and the garden marigold; but these are wanting in the aromatic and stimulant properties, as well as in the colouring matter of the true saffron; this last being known to chemists as a peculiar proximate principle, called polychroite. The Crocus tribe are all liable to the destruction of their roots by a parasitic fungus, termed Death-mould, or in France, *Mort de Safran*. In that country whole fields of the Crocus are destroyed by it. The English saffron is more valued than that of foreign growth.

5. **Naked-flowering Crocus** (*C. nudiflórus*).—Flowers solitary, appearing before the leaves; spathe simple; stigma erect, within the flower, and with several deep slender divisions, toothed at the broad tips; corm almost globose, with a membranous coat. This Crocus grows in a large meadow near Nottingham Castle, about Warwick, Warrington, Halifax, and other places, but is not considered truly wild; yet the conditions under which it occurs are so parallel to the cases of the bird's-eye primrose, the oxlip, and the snake's-head lily, as Mr. W. B. Crump has lately shown, that it appears to be either a native or an introduced species that has been naturalized for several centuries. It bears purple flowers during September and October, and the leaves appear the following spring. The whole of the Crocus genus have their seed-vessels, in the early stage, concealed beneath the ground, at the base of the long leaves; but on the withering of the flowers, the fruit-stalk rises, and brings them to the sun and air to ripen.

Order LXXXV. AMARYLLIDEÆ—AMARYLLIS TRIBE.

Perianth 6-parted; stamens six, arising from the base of the segments, and sometimes united below by their filaments; ovary inferior, 3-celled; style 1; stigmas 1 or 3; fruit a many-seeded capsule, or a berry containing from one to three seeds. This order differs chiefly from Irideæ in its anthers, which burst inwards, whereas those of that order open outwardly. It consists mostly of herbaceous plants, with perennial bulbous rootstocks, leaves arising from the bulb, and handsome blossoms.

1. DAFFODIL (*Narcissus*).—Perianth tubular at the base, spreading at the top, and cut into six segments, with a cup-shaped or bell-shaped crown or nectary, within which are the stamens; flowers from a spathe. Named from the youth Narcissus of the ancient poets.

2. SNOWDROP (*Galánthus*).—Perianth of six pieces, three outer ones spreading; three inner ones smaller, erect, and notched; flowers from a spathe. Name from the Greek *gala*, milk, and *anthos*, a flower.

3. SNOWFLAKE (*Leucójum*).—Perianth bell-shaped, of six equal pieces, somewhat thickened at the point; flowers from a spathe. Name from *leukos*, white, and *ion*, a violet.

1. NARCISSUS (*Narcissus*).

1. Common Daffodil (*N. pseúdo-narcissus*).—Spathe single-flowered; crown bell-shaped, erect, curled and notched at the margin, as long as the egg-shaped spreading outer segments; leaves linear and blunt; stalk two-edged; bulb one inch, with membranous coat. It is in moist woods and thickets, chiefly, that we must look for the Daffodil; and though it is local, it is not uncommon in many parts of England. In Ireland and Scotland it occurs only as a naturalized plant. Sometimes it nods above the grass of the meadow or orchard, or in the hedge; but it is not often in its wild state that we see it in such numbers as Wordsworth describes:

"I wander'd, lonely as a cloud
That floats on high o'er vales and hills,
When, all at once, I saw a crowd,
A host of golden Daffodils,
Beside the lake beneath the trees,
Fluttering and dancing in the breeze.
Continuous as the stars that shine
And twinkle in the milky way,
They stretch'd in never-ending line
Along the margin of a bay;
Ten thousand saw I at a glance,
Tossing their heads in sprightly dance."

The wild Daffodil is like that which is found in every garden during spring, except that its yellow hue is somewhat paler, and its blossom single. Like that flower, however, it deserves the name of Lent-lily; for it, too,

"Comes,
Before the swallow dares,
And takes the winds of March with beauty."

The Anglo-Saxons called the plant "affadylle," or "afrodille;" and several kinds were early cultivated in gardens. Gerarde tells of various varieties, known as the Nonpareil Daffodil, the Primrose-peerlesse, King's-chalice, Camel's-neck, and Longshanks. The double-yellow, from his friend Robinus of Paris, he says, he introduced into his garden; and speaking of the "Spanish Daffodil," he adds, "it doth likewise decke up our London gardens, where they encrease infinitely." Our common flower was called by various poets Daffy-down-dilly—a name yet retained in country places. In many parts of the country an old custom still exists of gathering these flowers and placing them on sticks; and these bouquets are carried by children into town, who sing the old Norfolk ditty—

"Daffy-down-dilly is coming to town," etc.,

and term this custom "going a-daffying."

All the species of Narcissus have an odour more or less noxious, which, in its mildest effect, produces drowsiness. The ancients were well aware of their narcotic properties; and, as old Gerarde says, "Sophocles nameth the Narcissi the garland of the infernal gods, because they that are

departed and dulled with death should worthily be crowned with a dulling flower." Our Common Daffodil possesses a poisonous juice, but it has been used on the Continent medicinally.

Though the Daffodil gladdens us by its brightness and early flowering, yet it is not a favourite with modern as with olden poets; and would not, at any rate, be used as a symbol of feminine grace, as it was by so many old writers. Michael Drayton has a poem called the "Shepherd's Daffadille":

> "Though with my flower thou didst not meet,
> Nor news of her doth bring;
> Yet is my Daffadille more sweete
> Than that by yonder spring.
>
> "I saw a shepherd, that doth keepe
> In yonder field of lilies,
> Was making, as he fed his sheep,
> A wreath of Daffadilles."

Spenser describes a lady as thus attired—

> "Upon her head a crimson coronet,
> With Daffadils and damaske roses set."

And the maidens are represented as

> "Gathering sweet Daffadillies to have made
> Gay girlonds from the sun their foreheads fair to shade."

When Milton bids

> "The Daffadillies fill their cups with tears,
> To strew the laureate herse where Lycid lies,"

there seems a meetness in the figure; but we fear that neither the comparisons to Daffodils, nor the gift of the wreath made of their blossoms, would suit modern feminine taste. The scent of the flower is unpleasant, and would doubtless cause headache, in a close apartment.

2. **Poet's Narcissus** (*N. poéticus*).—Spathe usually single-flowered; nectary very short, and notched at the edge; leaves keeled. This beautiful species, the Primrose-peerless of old writers, is well known in our gardens, and is, when found in a wild place, but an outcast from cultivated ground. It blooms in April and May, and has a flower cut into broad white segments, and a short crown with a dark purple or crimson edge. It is known throughout Europe as the *Narcisse*, *Narcis*, *Narzizo*, or by some very similar name, and is believed to be the Narcissus of the classic writers. The ancients used it as a funeral flower, and also consecrated it to the Furies, who were fancied to stupefy persons before punishing them. The bulbs of this, and some other kinds, contain a farinaceous substance of so emetic a property, that the older herbalists called them *bulbi vomitarii*. An extract from this plant is still given, in slight doses, for whooping-cough. The perfume of the flower is not so powerful as to be unpleasant. Lobel notices its culture in this country in 1570. The Chinese use it in the religious ceremonies customary at the commencement of their year; and the bulbs are sent from Canton to other places, just as they are about to blossom, and are planted in pots for this purpose. The flower is much prized in the East, is worn in the head-dress of the women of Aleppo, and placed in the vase which adorns the table

1. COMMON DAFFODIL.
   Narcissus pseudo narcissus.
2. THE POETS NARCISSUS.
   N. poeticus.
3. PALE N.
   N. biflorus.
4. SNOWDROP.
   Galanthus nivalis.
5. SUMMER SNOW FLAKE.
   Leucojum æstivum.

at Arabian festivals. It grows wild in France, Switzerland, and Southern Europe. Keats alludes, in sweet English verse, to the ancient legend of the metamorphosis of the youth Narcissus :—

" What first inspired a bard of old to sing
Narcissus pining in th' untasted spring?
In some delicious ramble he had found
A little space with boughs all woven round,
And, in the midst of all, a clearer pool
Than e'er reflected in its pleasant cool,
The blue sky here and there serenely peeping,
Through tendril wreaths fantastically creeping ;
And on the bank a lovely flower he spied,
A meek and forlorn flower, with nought of pride,
Drooping its beauty o'er the watery clearness
To woo its own sad image into nearness.
Deaf to light Zephyrus, it would not move,
But still would seem to droop, to pine, to love :
So while the poet stood in this sweet spot,
Some fainter gleamings o'er his fancy shot;
Nor was it long ere he had told his tale
Of young Narcissus and sad Echo's bale."

3. **Pale Narcissus** (*N. biflórus*).—Spathe 2-flowered; nectary very short, and notched at the edge; leaves keeled. This species, which is plentiful about Dublin, and occurs on sandy fields in many places in the south of England, is, however, but a naturalized plant. It flowers in May and June, and has smaller and less fragrant blossoms than the last species; they are of a delicate yellow, and the short nectary is without the crimson edge.

2. SNOWDROP (*Galánthus*).

Common Snowdrop (*G. nivális*).—Flowers solitary, drooping; leaves two, keeled, linear, and glaucous. There are many parts of the kingdom where this pretty flower grows without culture, in thickets, lanes, and orchards; evidently in some, the outcasts of gardens, but in others apparently wild. Very early in the year its snow-white flowers appear among the crackling leaves of winter, or even maintain the propriety of the French name, *Perce-neige*, by uplifting themselves through a mantle of snow.

" While still the cold north-east ungenial lowers,
And scarce the hazel in the leafless copse,
Or sallows show their downy powdered flowers,
The grass is spangled with its silver drops."

It was probably introduced into this country by the monks, and was deemed by them an emblem of feminine purity, one of its old names being "Fair Maid of February." Our earliest writers upon plants do not mention it as a wild flower. Gerarde says, "These plants doe growe wilde in Italie, and the places adjacent; notwithstanding our London gardens have taken possession of them manie yeares past." Its old name was Bulbous Violet. The Italians call it *Pianterella*, and the German name of *Schneeglöckchen* is not inappropriate. It is general in most European countries, and Dr. E. D. Clarke saw it on Mount Helicon. Its inner segments have a green patch at their extremity, but the snow itself is not whiter than the outer ones. There

is a slight and delicate perfume exhaled to attract the few early bees to the stores of honey in the grooves of the petals' inner face.

3. SNOWFLAKE (*Leucójum*).

1. **Summer Snowflake** (*L. æstívum*).—Spathe with several flowers, tip entire; leaves linear, keeled. Although this bulbous plant grows in moist meadows, chiefly in the south-east counties, it was probably brought thither long since from the woods of Germany and Italy, where it is a common flower. It is taller than the snowdrop, though with much of its general appearance, having white flowers, drooping, and the nearly equal segments all tipped with green. The stalk is usually rather more than two feet high, and is two-edged. The leaves, which are more than two, appear in winter, but the flowers do not burst the enveloping spathe until May. They are larger than the snowdrop blossoms, and more strongly scented. The French call it *Nivéote;* the Germans, *Weisse veilchen;* the Dutch *Sydeloos;* and the Italians, *Leucoio.*

2. **Spring Snowflake** (*L. vernum*).—Spathe containing 1 or 2 flowers only, tip divided; leaves and flowers appearing together in spring. Although this plant as a whole is smaller than the previous species, the flowers are much the same size; the two species are easily identified, however, by the tip of the spathe, the number of flowers, as well as by the time of flowering and leafing. The Spring Snowflake is in flower in March and April. It is not considered a real native, and it has only been found in copses in Dorsetshire.

Order LXXXVI. DIOSCOREÆ—YAM TRIBE.

Stamens and pistils on different plants; perianth 6-cleft; stamens 6, arising from the base of the perianth; ovary inferior, 3-celled; style deeply 3-cleft; fruit, a dry, flat capsule, or, as in our only British genus, the Black Bryony, a berry. This order consists chiefly of twining tropical shrubs. It is less distinctly characterized as one of the Monocotyledonous Order than most, by its leaves, for these have distinct stalks and netted veins.

BLACK BRYONY (*Támus*).—Perianth single, deeply 6-cleft; stigmas 3; berry 3-celled. Name, supposed to be the *Uva Taminia* of Pliny.

BLACK BRYONY (*Támus*).

Common Bryony (*T. communis*).—Leaves heart-shaped, pointed, glossy; stems climbing; rootstock tuberous, egg-shaped, fleshy, with black exterior. We have not many climbers in our woodlands, and the lovers of the picturesque would be sorry to spare from them the graceful wreaths of the Black Bryony. Its long leafy garlands entwine the boughs; and from among the large shining leaves, the long-stalked racemes of greenish-yellow flowers hang down from May to July. These have little beauty when compared to the handsome foliage which in autumn becomes changed to bronzy-purple; but when the woodland flowers have perished, and winter winds are sweeping down the yellow leaves, the dark, smooth, egg-shaped berries of the plant

1 BLACK BRYONY.
Tamus communis.

2 HERB PARIS.
Paris quadrifolia.

3 COMMON ASPARAGUS.
Asparagus officinalis.

4 BUTCHERS BROOM.
Ruscus aculeatus.

are very conspicuous in their scarlet hue, and very ornamental. The young shoots of this plant are said by Professor Burnett to have a mild and agreeable flavour, and to form a good substitute for asparagus. This plant, however, possesses a poisonous principle, both in its rootstock and berries; and as its fully-developed leaves may also be unwholesome, the common burdock might prove a safer substitute. But Professor Burnett is a high authority on the properties of plants; and he adds that the Moors boil the shoots, and eat them with vinegar and salt.

The Bryony has a very old reputation for the remedial virtues of its large root, which is full of a starchy substance, mingled with a bitter acrid matter, which is noxious till dissipated by heat and repeated washings, when it becomes, like that of the arum, wholesome and nutritive. A number of blackish tumours, possessing a larger amount of the acrid principle, grow on the rootstock; and these should previously be removed, if the rootstock be prepared for food. It is these tubers especially, however, which were valued by the old physicians for stimulating plasters, being crushed in a mortar for this purpose. Mrs. Moodie, who remarks of the Canadian Indians, that they are very skilful in the treatment of wounds and the cure of diseases by means of various plants, says that they make a common salve of the roots of this Bryony. The French call the plant *Tamier;* the Germans, *Schwarzwurzel;* the Dutch, *Vrouwenzegel;* the Italians, *Briona vera.*

Order LXXXVII. TRILLIACEÆ—HERB PARIS TRIBE.

Perianth 6—10 parted, in 2 rows, outer row or calyx green, inner green or coloured; stamens 6—10; anthers very long, their cells apart, connective produced; ovary superior, with 3—5 cells, and as many styles; fruit, a 3—5 celled berry; seeds numerous. This is a small order of herbaceous plants, often included in the Lily Tribe, with tuberous roots and whorled leaves, which have netted veins, but the leaves are not jointed to the stem. The properties of the species are acrid and narcotic.

PÁRIS.—Perianth of 8—10 narrow spreading divisions, inner ones slightly coloured; stamens 8—12. Name from the Latin, *par, paris,* equal, on account of the regularity of leaves and flowers.

HERB PARIS (*Páris*).

Herb Paris (*P. quadrifólia*).—Leaves egg-shaped, pointed, four or five in a whorl; flower single, terminal; rootstock stout, creeping. This very singular plant has a stem about a foot high, which, in May, has near its summit four large broad leaves with distinct veins. From the centre of these arises a single flower on a footstalk, about two inches long. The four outer sepals are green, the four inner and more slender petals are yellow; the stamens are usually eight in number, and the 4-celled ovary is crowned by four styles. This is the ordinary state of the plant. But the singular circumstance that it consists of four or twice that number of parts, is not invariable, for different specimens have been found exhibiting three or five leaves, or, in rare instances, eight, as well as having but three outer sepals. The most

common variation is in cases of five leaves; and in those rare instances of the Herb Paris with three leaves only, it has usually been found without inflorescence.

The flowers give off an unpleasant odour, which probably suggests to carrion-loving flies that the purple-brown ovary is a fragment of decomposing animal matter. Though perfectly dry it shines as though wet, and the well-known yellowish-brown dung-fly (*Scatophaga*) comes, attracted by the smell, and licks it; but, of course, gets no satisfaction. Then it climbs up over the anthers and dusts its under surface with pollen, which it carries off to the next Herb Paris flower, and deposits on the stigmas.

The Herb Paris occurs in moist shady woods, in many parts of England and Scotland. It has several country names, as One-berry, and True-love. The French call it *Parisette, Raisin de Renard,* and *Etrangle Loup;* the Germans, *Einbeere;* the Dutch, *Wolfsberie;* and the Italians, *Uva di Volpe.* Parkinson says that the leaves applied outwardly repress tumours and inflammation, and the Russian physicians prescribe the berries as a medicine for disorders of the brain. Every part of the plant contains a poisonous principle, which is strongest in the berries. Gesner remarked that these proved fatal to poultry. This botanist, among his various experiments on plants, swallowed a drachm of the Herb Paris in wine, and the dose was succeeded by copious perspiration and dryness of the throat. When taken in large quantity, the effects of this herb are now well known to be convulsion and delirium. Dr. Hamilton, in his "Flora Homœopathica," says that coffee is an antidote to the poison of an overdose. The homœopathists use every part of the plant in their infinitesimal doses, as a remedy for rheumatism, cough, and bronchitis.

Order LXXXVIII. LILIACEÆ—LILY TRIBE.

Flowers usually perfect; sepals 6, petal-like, distinct or united, and forming a tube; stamens 6, inserted upon the perianth; ovary superior, 3-celled, many-seeded; style 1; stigma simple or 3-lobed; capsule 3-celled, 3-valved, oblong; seeds numerous. The order consists chiefly of perennial herbs, rarely shrubs or trees; the greater number being beautiful flowers with bulbous roots, and leaves with veins running from the base to the point, mostly narrow, and never jointed with the stem. In a few instances, the flowers are green and inconspicuous. The roots are fibrous, but the rootstock is either a bulb or fleshy and creeping. Many species contain a bitter juice; and several, like the Aloe and Squill, yield important medicines; while the New Zealand Flax, *Phormium tenax,* furnishes, in the tough fibres of its leaves, a substitute for hemp and flax.

Group I. ASPARAGUS GROUP (*Asparágeæ*).

Roots never bulbous; fruit, a berry.

1. ASPÁRAGUS.—Perianth deeply 6-cleft, bell-shaped; stamens distinct. Name from the Greek *asparagos.*

2. BUTCHER'S BROOM (*Rúscus*).—Perianth deeply 6-cleft, spreading;

stamens 3 on different plants from the pistils; filaments connected at the base; style surrounded by a nectary. Name said by Sir W. Hooker to have been anciently *Bruscus*, from *Bruskelen*, in Celtic, Box-holly.

3. LILY OF THE VALLEY (*Convallária*).—Perianth 6-cleft, bell-shaped; stamens 6, distinct, inserted at the base of the perianth; stigma 1. Name from the Latin *convallis*, a valley, from the usual place of growth of some of the species.

4. MAY LILY (*Maianthemum*).—Perianth in 4 segments; stamens 4 attached to the base of the segments; ovary 2-celled, style short, stigma 2-lobed; berry white. Name from the Greek *maios*, May, and *anthemon*, flower.

5. SOLOMON'S SEAL (*Polygonátum*).—Perianth cylindrical, shortly 6-cleft, with erect segments; stamens 6, distinct, inserted on the middle of the tube of the perianth; stigma 1.

Group II. THE SPIDER-WORT GROUP (*Anthericeæ*).

Root not bulbous; fruit, a dry capsule.

6. SIMÉTHIS.—Perianth 6-parted; stamens 6, distinct; filaments bearded. Name from the Sicilian nymph, Simethis.

Group III. THE SQUILL GROUP (*Scilleæ*).

Root bulbous; fruit, a capsule; flower-stalk leafless.

7. GRAPE HYACINTH (*Muscári*).—Perianth inferior, almost globose, contracted at the mouth, 6-toothed. Named from the Greek *moschos*, musk, from the odour of some of the species.

8. GARLIC (*Allium*).—Perianth of 6 spreading pieces; flowers in an umbel, having at the base a 2-leaved sheath. Name, the Latin name of the plant.

9. SQUILL (*Scilla*).—Perianth of 6 spreading pieces; flowers not arising from a sheath, forming a cluster, and falling off as the seed ripens. Name from Greek, *skilla*, to injure.

10. STAR OF BETHLEHEM (*Ornithógalum*).—Perianth of 6 spreading pieces, which do not fall off, without a sheath, and growing in clusters on a leafless stalk. Name from the Greek *ornis*, a bird, and *gala*, milk.

Group IV. THE TULIP GROUP (*Tulipeæ*).

Root bulbous; fruit, a dry capsule.

11. GÁGEA.—Perianth of 6 pieces, spreading, without a nectary; anthers erect, attached to the filaments by their bases; style conspicuous. Named in honour of Sir Thomas Gage.

12. LLÓYDIA.—Perianth of 6 nearly equal spreading pieces, not falling off; anthers erect; flower solitary, or 2 on a stem. Named in honour of Mr. Edward Lloyd, who first discovered this to be a British plant.

13. TULIP (*Túlipa*).—Perianth bell-shaped, of 6 pieces, without a nectary, not falling off; anthers erect; stigmas without styles; flowers solitary, rarely 2 on a stem. Name from *tulipan*, the Persian word for a turban.

14. FRITILLARY (*Fritillária*).—Perianth bell-shaped, of 6 pieces, with a nectary at the base of each; anthers attached above their bases; style 3-cleft at the summit. Name from the Latin *frítillus*, a dice-box, from the chequered markings of the flower.

1. ASPARAGUS (*Aspáragus*).

Common Asparagus (*A. officinális*).—Stem herbaceous, mostly erect, without spines, branched; leaves reduced to minute scales, having in their axils clusters of bristly, flexible cladodes; rootstock creeping and perennial. This is a rare wild plant; and the origin of the vegetable so prized at our tables would scarcely be thought likely to prove of any worth by him who should find it in its native condition. It grows on some parts of our south-western coast, where, though it rarely attains the dimensions of cultivated specimens, it exhibits all the distinctive features which characterize it in our gardens. When growing in exposed situations, it does not exceed a foot in height; but in sheltered moist ravines it grows luxuriantly, and forms a thicket from two to three feet high. The young shoots, in their wild state, differ little from the Asparagus of the table, except that their peculiar flavour is too powerful. The hair-like cladodes grow in large bundles, of a rich full green colour, and the small greenish-white drooping flowers, which expand from June to August, are succeeded by bright red berries containing hard black seeds. The plant grows chiefly on gravelly or rocky spots near the sea. It has been found on the coasts of Dorsetshire, Somersetshire, and Wales; and at Kynance Cove in Cornwall, a rock has received the name of Asparagus Island, on account of its growth there. It occurs, though rarely, on Seaton Links, near Edinburgh, and at Tramere in Ireland; also in the Channel Islands.

The Asparagus was, by our fathers, called Sperage and Sparrow-grass. The latter name, though used now only by the uneducated, was formerly in use by the best writers in the English language, as Camden, and is, no doubt, a corruption of the Greek *asparagos*. The Continental names seem nearly related to it. Thus the French call the plant *Asperge*, the Germans, *Spargel*; the Dutch *Aspergie*; the Italians, *Sparragio*; the Spaniards, *Esparrago*. The word was originally derived from the Greek "to tear," from the prickly nature of some species. The *A. horridus* is beset with thorny spines, three or four inches long, but its young shoots form a valuable vegetable to the people of North Africa.

Our cultivated Asparagus is one of the oldest and most esteemed culinary vegetables; it was a favourite dish with Cato, and was praised by Columella and Pliny. The latter mentions a kind which grew on the sandy soils near Ravenna, three shoots of which would weigh a pound; and from other writers, we learn that the Asparagus attained a height of from twelve to twenty feet. Under the Romans, stems of this plant were procured of three pounds weight—"heavy enough," says Dr. Doran, "to knock down a slave in waiting;" while "Do that as quickly as you would Asparagus," is a proverb descended from Augustus. The Greeks ate their Asparagus with equal zest, but it was of smaller dimensions; and "the doctors of that day," says our author, "denounced Asparagus as injurious to the sight; but they

told also that a slice or two of boiled pumpkin would re-invigorate it." Pliny said that Nature intended Asparagus to grow wild that all might eat thereof.

In the old gardens of our country the Asparagus was much valued. "It is," says Parkinson, "a principal delectable sallet herb, whose young shootes, when they are a good handfull high above the earth, are cut an inch within the ground, which being boyled, are eaten, with a little vinegar and butter, with great delight." The seeds removed from the berries, after drying, are said to make a good substitute for coffee, and to be scarcely less highly-flavoured than that of the Arabian berry; while a paper-maker of Ghent has stated that an excellent paper might be made of the refuse of the vegetable, and might, with still greater economy, be made by mingling a pulp of Asparagus fibre with that obtained from beetroot.

2. Butcher's Broom (*Ruscus*).

Common Butcher's Broom (*R. aculeatus*).—Stem green, erect, much branched; leaves minute, falling early, their functions performed by numerous egg-shaped, pointed cladodes, bearing the small flower on their upper surface; rootstock fleshy, creeping. This, which is the only British shrub among endogenous plants, is locally abundant in bushy heaths and woods in the south of England, where the soil is of sand or gravel; but it is not a common plant in all parts of the kingdom; and though seen occasionally in Scotland and Ireland, is not believed to be truly wild there. It is a rigid shrub, which seems as if winter's roughest wind would hardly bend it; and its flat dark, stiff, evergreen cladodes have little succulence. These cladodes are really shoots that have been flattened and made leaf-like; during February and March they have a very singular appearance, from having a little greenish flower growing from about the middle of the upper surface. We have no other native plant flowering in this manner; but owing to the small size of the blossom, it is often overlooked. Bishop Mant says of it:—

> "Mid barren heaths the Butcher's Broom,
> On thorn-tipt leaves, its lovely bloom
> Infixes, when the central eye
> Shoots to a purple nectary;
> Bright mid the greenish petals shows,
> And dark green leaf whereon it blows."

By the end of August or the beginning of September the shrub may attract more notice by the round scarlet berries, each as large as a small cherry, seated on the cladodes; though, as far as the observation of the author has extended, these fruits are very uncertain, in one autumn being in profusion, while, in the next season, scarce one is to be found in the same wood where they glistened so brightly in the previous year. The boughs, when gay with these berries, form a very pretty addition to the bouquet of Christmas. The name of Butcher's Broom originated in the habit of sweeping the shops where meat is kept by a broom made of its boughs; and in Italy branches of the plant tied together are commonly used for sweeping houses. The shrub has, besides, several old familiar names, as Ruscus, Bruscus, Kneeholme, Kneeholly, Kneehulver, Pettigree, and Jews' Myrtle; and the French call it *Fragon piquant*, *Buisépineux* (spiny box), and also *Petit-houx* (little holly);

ond the name of Bruscus is said to be derived from *Beus*, box, and *Kelen*, holly, in Celtic; that is, Box-holly. The berries have a sweet flavour, and each contains two orange-coloured seeds. These fruits were, in former times, crushed and applied to broken bones, and the thick white roots were boiled with honey or sugar, and believed to be a good medicine for pulmonary disease.

During the winter months we may often see large boughs of this shrub exhibiting nothing but the gauzy network which constitutes the framework of the cladodes, the whole branch being a mass of skeletons from which the green part has died away. We know of no native plant which exhibits this woody fibre so commonly as the Butcher's Broom; and in days when plant skeletons were much prized this shrub would probably be often sought by those who made them. We may still see, in museums and elsewhere, collections of these skeletons, exhibiting the arrangement of the fibre in leaves, roots, and even in the delicate corollas of plants. They have mostly been made by a somewhat tedious process, by macerating in water, and then removing, with some delicate implement, the pulpy decomposed portion. They are afterwards washed and bleached by some chemical preparation, and, when properly cleaned, will last for many years.

The art of making these skeletons is little valued now, because these web-like vessels have been so often examined with the microscope, and pictured by the engraver, that we can readily make ourselves acquainted with their structure; but the older botanists paid much attention to it, and as early as 1645 accounts of the process were published. Several works afterwards appeared on the same subject; and finally, a folio book was presented to the world, containing engravings of the fibres of the ivy, Butcher's Broom, orange, pear, maple, holly, white-thorn, etc. Conrad Gesner and Du Hamel are among the celebrated botanists who devoted much time to the preparation of these vegetable fibres.

3. Lily of the Valley (*Convallária*).

Lily of the Valley (*C. majális*).—Leaves 2, egg-shaped, lanceolate, springing from the root; flowers bell-shaped, with segments bending back, drooping, in a raceme; rootstock creeping. Among the flowers pre-eminently favoured by poets stands the delicate Lily of the Valley; and writers both of olden and modern days agree in regarding it as an emblem of modesty. The unsullied purity of the snowy blossom, which, while young, is enfolded in the two large green glossy leaves that through its whole growth serve as a mantle to it; and its lowly home in the shady glen, where to be seen it must be looked for, have served to invest it with poetic interest. The olden lovers of flowers, the monks, and nuns, and simplers of past times, looked, too, on the plant with loving eye, believing that it was the same to which our blessed Saviour pointed His saddened disciples, when He bade them "Consider the lilies of the field." But modern travel and modern science have swept away the pleasing illusion. Neither in field nor grove of the Holy Land may the pilgrim find this lovely Lily, though many of these plants which the botanist terms liliaceous grew there, and many a flower which men in olden times would have called a Lily.

1. LILY OF THE VALLEY
Convallaria majalis

2. NARROW-LEAVED SOLOMON'S SEAL
Polygonatum verticillatum.

3. COMMON S. S.
P. multiflorum.

4. ANGULAR S. S.
P. officinale.

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But we must return to our lowly Lily, which, during May and June, is blooming in many a pleasant wood in England, though rarely in those of Scotland. The stalk is about a foot high; and the fragrant pure white, almost globular little bells, hang drooping in a long one-sided cluster. The large leaves are rarely more than two in number, and scarlet berries succeed the blossoms. The flower had the old names of Conval Lily, May Lily, and Liriconfancie. It is indigenous to most of the countries of Europe from Italy to Lapland, and is very abundant in the woods of France and Germany. The German and Dutch names for the plant both signify May-flower, and the French call it *Muguet de Mai*, as well as *Lis de Vallées*. It is termed in Italy *Mughetto* and *Giglio Convallio*.

The blossoms of this plant, distilled in wine, were supposed to be efficacious in curing many complaints. Parkinson says:—"The flowers of the white kinde are often used with those things that helpe to strengthen the memorie, and to procure ease to apoplectic persons. Camerarius setteth downe the manner of making an oyle of the flowers hereof, which, he says, is very effectual to ease the paines of the gout, and such like diseases, to be used outwardly, which is this: 'Have filled a glass with the flowers, and being well stopped, set it for a moneth's space in an ante's hill, and after being drayned cleare, set it by for use.'" Ettmuller recommended the flowers to be dried and powdered to make a snuff good for the cure of head-ache; and in Germany the flowers mingled with wine are still used for this pain. The Hanoverians are so fond of their lowly wild Lily, that on Whit-Monday large troops of merry-making people go forth to the neighbouring woods to gather it; and when evening falls on their homes, there is scarce a house in Hanover which is not adorned with a large bouquet of these flowers. A pleasant perfume is made in some countries from the blossoms of the Lily of the Valley.

4. May Lily (*Maianthemum*).

May Lily (*M. convallaria*).—Leaves alternate, heart-shaped, those from the rootstock on long stalks, those from the stem short-stalked or sessile. Flowers white and fragrant, almost erect, in a terminal raceme on a wavy stem. This very rare plant is wild in but few places in our country, and these restricted to England. It has been recorded from Yorkshire, Lancashire and Bedfordshire. It flowers in May and June, and the blossoms are succeeded by white berries, about a quarter of an inch in diameter. It is also known as *Smilacina bifolia*, and is occasionally referred to as False Solomon's Seal.

5. Solomon's Seal (*Polygonátum*).

1. **Narrow-leaved Solomon's Seal** (*P. verticillátum*).—Leaves lanceolate, whorled; stem erect, angular; rootstock thick, creeping. This is a very rare plant of woods and glens in Forfar and Perth, and of one locality in Northumberland. It has an angled stem two or three feet high, and numerous soft leaves growing in whorls of from three to six. Its whitish drooping flowers are constricted in the middle, and expand in June. They are succeeded by red berries.

2. **Common Solomon's Seal** (*P. multiflórum*).—Leaves egg-shaped, oblong, half-clasping, smooth and alternate; stalks one or many flowered: stem rounded; rootstock creeping. This Solomon's Seal, though truly wild in several parts of England, is quite a rare woodland plant. Its arching stem is about two feet high, and its bright glossy green leaves are very conspicuously marked with nerves, and take an opposite direction from that of the large nodding waxen-white flowers, tipped with green. It blossoms in May and June, and the flowers give place to blue-black berries about one-third of an inch in diameter.

This is still a favourite garden-flower; but it has lost much of its old repute as a wondrous healing herb. On the rootstock there are circular marks having a resemblance to the characters of a seal, but really indicating where the stems of former years have been thrown off in autumn. These to the old herbalists were an indication of its uses; it was destined to seal or consolidate wounds. From the ancients the notion descended to our own old writers on plants, and to those on the Continent; and the names of *Sceau de Salomon* in France, of the Italian *Sigillo di Solomone*, and the Spanish *Sello de Salomon*, all have reference to the belief that the plant bore the impress of the celebrated seal of him who spoke of plants from the cedar of Lebanon to the hyssop on the wall. Gerarde says: "But note what experience hath found out, and of late daies especially, among the vulgar sort of people of Hampshire, which Galen, Dioscorides, or any other that hath written of plants, have not so much as dreamed of; which is, that if any of what sexe or age whatsoever that chance to have any bones broken, in what parte of their bodies it be, their refuge is to stampe the rootes hereof, and give it to the patient in ale to drinke, which soddeneth and gleweth together the bones in very short space and very strongly; yea, although the bones be but slenderly and unhandsomely placed and wrapped up."

This old doctrine of "signatures"—the belief that plants bore outward signs of invisible virtues—was believed in those days, ere herbcraft had yielded to botany, by all those

> "Who knew the cause of everie maladie,
> Were it of colde or hote, or moist or drie."

Our own countryman, John Ray, who, in this instance, as well as in many others, was greatly in advance of his times, was among the first to express his disbelief of the doctrine. In his work on "The Wisdom of God in Creation"—a work whose design, in some measure, anticipated that of the celebrated "Bridgewater Treatises"—this great naturalist remarks: "As for the signatures of plants, or the notes impressed upon them as notices of their virtues, some lay great stress upon them, accounting them strong arguments to prove that some understanding principle is the highest original of the work of Nature; as indeed they were, could it be certainly made to appear that there were such marks designedly set upon them; because all that I find mentioned by authors seem to be rather fancied by men, than designed by Nature to signifie or point out any such virtues or qualities as they would make us believe. Howbeit, I will not deny but that the noxious and malignant plants do, many of them, discover something of their nature by

the sad and melancholic visage of their leaves, flowers, or fruits. And that I may not leave that head wholly untouched, one observation I shall add, relating to the virtues of plants, in which I think there is something of truth; that is, that there are, by the wise dispensation of Providence, such species of plants produced in every country, as are made proper and convenient for the meat and medicine of the men and animals that are bred and inhabit therein. Insomuch, that Solenander writes that, from the frequency of the plants that spring up naturally in any region, he could easily gather what endemical diseases the inhabitants thereof are subject to. So in Denmark, Friesland, and Holland, where the scurvy usually reigns, the proper remedy thereof, scurvy grass, doth plentifully grow."

Nor was the doctrine of planetary influence less generally believed than the notion of signatures; and Aubrey's opinion of a plant, "that if it be not gathered according to the rules of astrology, it hath little or no virtue in it," was pretty general little more than a century since. Michael Drayton, referring to the long lives of antediluvian men, says:—

> 'Besides, in medicine simples had the power
> That none need then the planetary hour
> To helpe their working, they so juiceful were;"

but in his own time, the simples needed to be gathered at certain periods, as they might be under the influence of the Sun, Moon, Jupiter, Mars, or other planets. But Michael Drayton has fully described one of the herbalists of old, and has given us a list of the remedies which he employed; and as his "Polyolbion" is little read in modern times, we extract it for our readers:

> "But absolutely free
> His happy time he spends the works of God to see,
> In those so sundry herbs which there in plenty grow,
> Whose sundry strange effects he only seeks to know;
> And in a little mauud, being made of osiers small,
> Which serveth him to do full many a thing withal,
> He very choicely sorts his simples, got abroad:
> Here finds he on an oak rheum-purging polypode;
> And in some open place that to the sun doth lie,
> He fumitory gets, and eyebright for the eye:
> The yarrow wherewithal he stays the wound-made gore
> The healing tutsan then, and plantaine for a sore;
> And hard by them, again, he holy vervain finds,
> Which he about his head that hath the megrim binds;
> The wonder-working dill he gets not far from these,
> Which curious women use in many a nice disease;
> For them that are with newts, or snakes, or adders stung
> He seeketh out a herb that is called adder's-tongue;
> As Nature it ordain'd its own like hurt to cure,
> And sportive did herself to niceties inure.
> Valerian then he crops, and purposely doth stamp
> To apply unto the place that's haled with the cramp;
> The chickweed cures the heat that in the face doth rise,
> For physic some again he inwardly applies;
> For comforting the spleen and liver, gets for juice,
> Pale horehound, which he holds of most especial use.
> And for the labouring wretch that's troubled with a coug
> Or stopping of the breath by phlegm that's hard and toug
> Campana here he crops, approved wondrous good;
> Or comfrey unto him that's bruised, spitting blood;
> And for the falling ill by five-leafe doth restore,
> And melancholy cures by sovereign hellebore:

Of these most helpful herbs yet tell we but a few
To those unnumbered sorts of simples here that grew,
What justly to set down even Dodon short doth fall,
Nor skilful Gerarde yet shall ever find them all."

The rootstock of the Common Solomon's Seal was, by the old writers, frequently prescribed for a use which it still retains in country places: it is applied for removing the blackness produced by a bruise; and we have often witnessed the success of the remedy. The Turks are said to eat these roots, when prepared for the table; and in times of scarcity they have been dried and ground for flour.

3. **Angular Solomon's Seal** (*P. officinale*).—Leaves egg-shaped, oblong, half-clasping, alternate, light green and shining, somewhat leathery; flowers mostly solitary or two together. This species has an angular stem a foot or a foot and a half high, and bears fragrant greenish-white flowers in May and June. It is a very rare plant of some English woods, from Northumberland to Dorset and Somerset.

6. Simethis (*Siméthis*).

Variegated Simethis (*S. bicolor*).—Leaves linear, grass-like, the upper part keeled, the lower flat; stem and leaves enclosed in sheathing scales; flowers in panicles; rootstock of stout fibres. This beautiful little flower was added to the British Flora little more than half a century ago, and it has been found in two localities: the one near Bournemouth, Dorset, and the other on hills and by the sea-shore of Derrynane in Kerry. Its discovery in a plantation of firs, chiefly of *Pinus maritima*, was very interesting to British botanists. Plants found for the first time in the neighbourhood of the sea are readily considered as of accidental introduction by ballast or other means; but in this case, the remote and elevated spot on which the flower was first seen renders this improbable; though, as Sir William Hooker and Dr. Arnott observe, its seeds might have been brought thither among the pine-seeds which were planted there. Miss Wilkins, the young lady who first saw the plant in this place, says in a letter to the author: "I was visiting Bournemouth in the July of 1847, and was delighted with the rich variety and beauty of the wild flowers of that locality. While strolling through a fir-plantation which skirts the cliffs, about two miles from Bournemouth on the Poole side, I observed a lovely white flower, which bespangled the long grass over a spot many yards in circumference. From my first glance at the elegant little plant, with its delicate star-like blossoms, I felt assured that it was something rare, though I little suspected that it would prove a discovery of so much interest. A specimen was forwarded to Dr. Lindley, who informed me that the flower was new in this country. The blossom itself very much resembles that of the single-flowered yellow asphodel, both in its formation and in its woolly stamens; but the Simethis is white, delicately tinted with lilac. Its stem is from one to two feet in height, and its root of fleshy fibres; the seeds are black."

This lady adds, that the beautiful flower was again gathered from the spot in the summers of 1848 and 1849. In June, 1854, the author of these pages requested a friend to visit Bournemouth, in order to ascertain if the plant

1. VARIEGATED SIMETHIS
Simethis bicolor
2. WILD HYACINTH, OR BLUE-BELL
Scilla nutans
3. STARCH GRAPE H.
Muscari racemosum

still grew there. This botanist wandered about the spot during the whole length of a midsummer day, but could discover no trace of flower or leaf; and the same result followed the researches of a botanist known to the discoverer who visited the place in July of the preceding year. It was, however, again found at Bournemouth during the summer of 1855; for Mr. James Hussey says, in the *Monthly Journal* of that year: "I had the pleasure of seeing the *Simethis bicolor* on the 6th of July, near Bournemouth." The cause of its temporary disappearance seems to have been some disturbance of the soil, in consequence of new roads having been made near the place. It now appears to have become entirely extinct there. The plant was first seen in its Irish locality in 1849. Mr. Hewitt Watson states that, according to Dr. Harvey, the plant so lately discovered in England had been then found by Mr. Thaddeus O'Mahony growing in a perfectly wild situation, on hills near Derrynane Abbey; and that a specimen, agreeing in all respects with a Portuguese one in the University Herbarium, was sent from Derrynane in the June of that year. Mr. Watson does not regard it as a native of Ireland.

The *Simethis* is by some writers called by its older specific name of *planifolia*, which seems less characteristic than that of *bicolor*. It is also the *Anthericum planifolium* of Linnæus. It is not infrequently found on barren heaths in the west of France.

7. Grape Hyacinth (*Muscári*).

Starch Grape Hyacinth (*M. racemósum*).—Flowers egg-shaped, drooping, in a crowded cluster, upper ones almost sessile; leaves linear and flaccid; bulb small, producing bulbils at its base. This is a rare plant, growing in pastures and sandy places. It is considered by Dr. Bromfield to be certainly indigenous in the fields about Cavenham, in Suffolk, where it is abundant; but in some localities it is, perhaps, but "a garden flower run wild." The small blossoms are dark bluish-purple, and have the odour of starch; the plant abounds in slimy juice, similar to that of the Hyacinth. The stalk is about a foot high, and the flowers appear in May. The French call it *Jacinte botride*, and the Italians, *Giacinto*.

8. Onion, Leek, Garlic (*Allium*).

** Stem-leaves flat, or keeled; not hollow.*

1. Great Round-headed Garlic, or Wild Leek (*A. ampelóprasum*).—Umbels globose, compact, usually without bulbils, 3 alternate stamens deeply 3-cleft; leaves linear, keeled, pointed; spathe 1-leaved, pointed; bulb large, often with stalked bulbils around its base. This is a rare but very conspicuous plant, bearing, in July, large heads of pale purple flowers, on a stem three or four feet high. It has very long grass-like leaves, and, rarely, some small bulbs, about as large as a black currant, appear among them. It is truly wild on the cliffs of Guernsey; but on those of Steep Holmes, where it has been known to grow since the time of John Ray, it is thought by Mr. Borrer to be the remains of former cultivation. It is very nearly allied to the Garden Leek (*A. porrum*), but differs in the clustered perennial young bulbs.

It has the strong odour of Garlic, an odour shared by all the *Allium* genus, and which is subdued by cooking. These plants are much less acrid when grown in warmer climates.

Garlic and Onions of various kinds were planted in the gardens of the monasteries in this country; and the man described by Chaucer would not, in his days, have been hard to find—

"Well loved he Garlike, Onions, and Leekes."

Fuller, referring to Garlic, says: "Not to speak of the murmuring Israelites, who prized it even before manna itself, some avow it soveraigne for men and beasts in most maladies, though the scent thereof be somewhat valiant and offensive. Indeed, a large book is written on its virtues, which, if held proportionate with truth, one would wonder any man should die who hath Garlic growing in his garden." It was greatly commended by the old writers as a cure for ague; and it is still in Kent, and probably in other counties, placed in the stocking of the child afflicted with whooping-cough, in order to allay this malady.

The worth attached to the Garlic and Onion tribe by the ancient Egyptians, often elicited the sarcasms of the writers of other nations. They are said to have sworn by the Onion, Leek, and Garlic, and even to have adored some of these plants. Juvenal, the Roman satirist, says:—

"How Egypt, mad with superstition grown,
Makes gods of monsters, but too well is known:
'Tis mortal sin an onion to devour;
Each clove of garlic hath a sacred power—
Religious nation sure, and blest abodes,
Where every garden is o'errun with gods!"

But if some abstained from Onions, it is certain that the multitude ate them; and the whole tribe of these plants are yet much prized in Egypt as food.

2. **Babington's Great Round-headed Garlic** (*A. babingtónii*).—Umbels loose and irregular; 3 alternate stamens 3-cleft; stem leafy below; leaves linear, acutely keeled. This is a tall variety or sub-species of *A. ampeloprasum*, having a stem from four to six feet in height, and very long and rather broad leaves. The pale reddish flowers, with a green keel on their outer segments, expand in August, and the bulbils among them are numerous, and as large as cherries. It is a very rare plant, and is found in some places in Cornwall, and in Great Arran Island, Galway.

3. **Sand Garlic** (*A. scorodóprasum*).—Umbel loose and globose, with numerous small bulbils; stem leafy below; leaves linear, flat, keeled; stamens included, 3 alternate ones 3-cleft; bulb egg-shaped, with stalked bulbils at its base. This species is not frequent, occurring only in the woods and fields of some hilly and mountainous districts in the north of England. Its stem is two or three feet high, rounded and firm, and the flowers are deep red, intermixed with dark purple bulbils, which are more numerous than the flowers; the spathe is short and broad, with a sharp point.

4. **Streaked Field Garlic** (*S. oleráceum*).—Umbel loose, bearing bulbils, leaves semi-cylindrical, channelled above, ribbed beneath; stamens simple,

1. FLOWERING GREAT ROUND HEADED GARLIC
Allium ampeloprasum.

2. SAND G.
A. scorodoprasum.

3. STREAKED FIELD G.
A. oleraceum.

awl-shaped, and about as long as the flower; bulb small. A form having leaves somewhat flattened, and with more numerous ribs beneath, is the Mountain Garlic (*A. carinatum*) of some writers. The Streaked Field Garlic is not a common plant, though not rare in some parts of Essex, as about Felstead and Dunmow, where it is found in corn-fields. It flowers in July, bearing dingy, yellowish-white blossoms on long stalks, with numerous reddish-purple bulbils on a stem which is leafy below. The leaves are used in cookery, and have the Garlic odour in great power.

* * *Leaves hollow.*

5. **Chive Garlic, or Rush-leaved Onion** (*A. schœnóprasum*).—Umbel globose, with many flowers, and without bulbils; stem naked, or with 1 leaf; leaves slender, rounded or grooved above, and pointed; spathes 2; stamens undivided; bulbs small, tufted and stalked. This is a pretty Garlic, bearing, in June and July, dense heads of bright purple or pinkish blossoms, on a stem about half a foot to a foot in height. It is found, though very rarely, in meadows and rocky pastures. A form, with the leaves curved, and the style longer than the young germen, is the *A. sibiricum* of some writers; it grows on rocks and cliffs on the sea-shore of Cornwall. It is larger than the ordinary form of Chive Garlic, and differs in the bending form instead of the upright leaves.

6. **Crow Garlic** (*A. vineále*).—Umbel globose, bearing bulbs, 3 alternate stamens deeply 3-cleft, projecting beyond the perianth; leaves cylindrical, smooth; spathe of one leaf; bulb small. This is one of the more common kinds of Garlic, growing in corn-fields and waste places in various parts of England and the south of Scotland. It occurs on sand-hills in some parts of the Kentish shore, as on those near Deal, where a variety is found destitute of bulbs. In ordinary specimens, these are, however, very numerous, and are small, oval, and greenish-brown; the flowers being small, few, and of pale rose colour, with green keels, having the anthers much protruded. The plant flowers in July.

7. **Small Round-headed Garlic** (*A. sphærocéphalum*).—Umbel globose, without bulbs; leaves nearly cylindrical, smooth, channelled above, alternate stamens, 3-cleft; capsule triangular, with blunt edges; bulb having stalked offsets, perennial. This is a plant bearing, in June and July, numerous rose-coloured or purple flowers. It has a stem one or two feet high, and leafy below. It was discovered by Messrs. Babington and Christy, on the sands of St. Aubin's Bay, Jersey; it also occurs at St. Vincent's Rocks, Bristol.

8. **Triangular-stalked Garlic** (*A. triquetrum*).—Umbel lax-flowered, without bulbils; spathes 2, lance-shaped; leaves sharply keeled, embracing base of flower-stems; bulb egg-shaped, small. This species is confined to Cornwall and Guernsey, so far as its distribution in these islands is concerned. The scape, which is from a foot to eighteen inches high, is stout and three-edged. The white, bell-shaped flowers all lean to one side of the head.

* * * *Leaves broad and flat.*

9. **Broad-leaved Garlic, or Ramsons** (*A. ursínum*).—Umbel nearly level at the top, without bulbs; leaves rising from the bulb, between egg-

shaped and lanceolate, stalked; bulb slender, compressed. This is the most common of all our species of Garlic. It is somewhat local, but found in abundance in moist woods and hedges in many a rural district. The wanderer in the wood in April, who sees its one or two broad, bright green leaves, may at first glance believe them to be the foliage of the lily of the valley; but an inadvertent footstep would soon, as it bruised the plant and drew forth its odour, remind him of the presence of Garlic. When the pretty white cluster of blossoms rises on a stalk about half a foot high, from between the two-leaved spathe, we are tempted to mingle it with the nosegay of wild flowers; though were we to do so, its offensive scent would quite overpower their sweetness. The plant continues in blossom till about Midsummer. Our fathers called this herb Ramsies, Ramsons, Bear's Garlic, and Buckrams. The last name is very old, and one of those by which the plant was known to the Anglo-Saxons. It was esteemed in early times so beneficial to health, that one of our oldest proverbs says—

> "Eat Leekes in Lide, and Ramsins in May,
> And all the year after physitians may play."

And Aubrey remarks, "The vulgar in the West of Englande doe call the month of March, Lide." Gerarde tells us that, in his time, the leaves were "stamped and eaten by divers in the Low Countries with fish, for a sauce, even as we do eate greene sauce with sorrill." He adds, "that many labouring men in this country eat them, in April and May, with butter." They are still commonly used in villages, when infused in brandy, as a tonic medicine.

The plant is believed to be injurious to the vegetation around it. It gives its unpleasant flavour to the milk of cows which eat it; and a friend residing in Somersetshire informs the author, that this plant proves very troublesome when in the hedges and grass of pasture-lands, rendering it necessary in spring to tether the cows, which, being just turned out, would eat it readily among the grass. He adds that he has known the flesh of calves to be flavoured by this Garlic. Sheep altogether refuse the plant.

The late Professor Johnston remarks of this plant, "that when distilled in a retort, a heavy volatile oil passes over and collects beneath the water which condenses in the receiver; and which is the same as that of onion, shallot, etc. This oil is of a brownish-yellow colour, heavier than water, and possesses the peculiar smell of the plants which yield it, but in a highly pungent and concentrated form. It is their strong-smelling principle or ingredient. The strength of its odour may be judged from the fact, that powerfully smelling as garlic is, from thirty to forty pounds of it are required to yield an ounce of the oil;" so that a hundredweight of garlic is needed to procure three or four ounces of oil.

The *A. roseum*, a species of Garlic of Southern Europe, and an old garden-flower, has been found near Rochester in Kent, but is not truly wild.

9. Squill (*Scilla*).

1. Wild Hyacinth, or Blue-bell (*S. nútans*).—Flowers drooping in a raceme; segments turning backwards; bracts in pairs; leaves linear,

1. BULBIFEROUS GREAT ROUND HEADED GARLIC.
Allium babingtonii.

2. CHIVE G.
A schœnoprasum.

3. CROW G.
A vineale

4. SMALL ROUND HEADED G.
A sphærocephalum.

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grooved and pointed; bulb coated, 1 inch diameter. There are few of our native woods where, in early spring, we could not find the Blue-bells nodding to the wind, often clustering in such multitudes as to tint the spot with their rich colour. In April and May one might often be reminded of the words of Keats:—

"A youngling tree
That with a score of light green brethren shoots
From the quaint mossiness of aged roots,
Round which is heard a spring-head of clear waters,
Bubbling so wildly of its lovely daughters,
The spreading Blue-bells; it may haply mourn
That such fair clusters should be rudely torn
From their fresh beds, and scatter'd thoughtlessly
By infant hands, left on the path to die."

Our wild flower is the *Hyacinthus non-scriptus* of Linnæus. Dodonæus says, that Parkinson so called it, "because no other, before himselfe, had written of this sorte"; but, he adds, that it is generally known in England by the name of Harebel. Gerarde calls it the Blew Harebel, or English Jacinth; and the French still term it *Jacinte des bois.* The Hyacinth of the ancients was some liliaceous plant, named from the youth Hyacinthus, fabled by the poet to have been transformed into a flower. The leaves of the Greek Hyacinth bore some marks which were imagined to resemble the Greek AI, alas! And our own early poets often refer to

"The lettered Hyacinth of darksome hue."

Thus Drummond says—

"For aye,
Oh Hyacinths, your AI keep still;
Nay, with more marks of woe your leaves now fill!"

and Milton and others echo the strain.

It was from the absence of these marks that our woodland flower received its earlier scientific name, and the latter one of *Agraphis* relates to the same circumstance. Its leaves are very green and glossy, and the bells hang from a stalk, often a foot high; the little bracts of purplish-green colour being at the base of each partial flower-stalk. The bulbous root contains a slimy substance, which, in Queen Elizabeth's time, was used in stiffening muslin, in pasting the corners of books, and in fixing feathers to arrows. Every part of the plant possesses a slimy juice.

Dr. Braun, in his recent work on the "Phenomenon of the Rejuvenescence of Nature," remarks, that the greater part of the vegetation which unfolds itself in spring, after winter has passed over it, was already formed in the preceding summer and autumn. He observes that, in autumn even, we find in the terminal and lateral buds of the oak the rudiments of leaves destined for next year; and in the buds of the lilac are found, not only these, but the rich cluster of blossom for the future year, in which hundreds of closely-crowded flowers appear now but as inconspicuous green nodules. In the heart of the tulip-bulb, shielded by succulent leaf-scales, exists in autumn a little greenish-yellow bud. This, the learned author adds, is the tulip-stem for the next year, with all the parts which it elevates from the earth nine months later, namely, two or three leaves, between which lies

hidden the blossom; the petals and stamens appearing as a uniform papilla not yet closed, as in the latter state of the flower-bud, with the pistil in the middle, as a little three-lobed papilla. The spike of the Hyacinth is yet more advanced at the same period in the interior of the many-scaled bud; for the three outer sepals of each flower begin already to close up.

What flower the ancients might have termed the Hyacinth, is uncertain. Some have thought that the fritillary, others, that the Martagon lily, was the Greek Hyacinth. The flower was worn by the maidens of Greece who officiated at bridal festivities; and an annual festival, termed *Hyacinthia*, was held in Laconia in honour of Hyacinthus and Apollo. Homer speaks of the plant:—

"And sudden Hyacinths the turf bestrow."

Macaulay, in his paper on "The Flower-gardens of the Ancients," quotes an allusion of Tibullus, in which the surpassing beauty of a woman is compared to that of the Hyacinth, which exceeds in loveliness all flowers of the garden. The Oriental poets, as Hafiz, often describe waving tresses as resembling the curled petals of the Hyacinth; and "Hyacinthine locks" has become a common comparison.

2. **Vernal Squill** (*S. vérna*).—Flowers in a hemispherical corymb; bracts lanceolate, blunt; leaves linear, channelled; bulb coated. This lovely little plant is occasionally found growing in great profusion in rocky pastures near the sea, but mostly on the western coasts, and is a frequent flower in the Orkney Isles. It occurs but very rarely in east and north-east Ireland. It is about five or six inches high; and in April, May, and June, its clusters of star-like, sweetly-scented flowers of brilliant blue, and its numerous dark green smooth leaves, often attract the notice of those who wander on the shores of Cornwall, not only on the sea-cliffs, but on heathy commons several miles inland. In this species the leaves precede the flowers. Its dry capsules, full of glossy black seeds, are conspicuous until very late in the year.

3. **Twin-leaved Squill** (*S. bifólia*).—Flowers in a somewhat corymbose cluster, without bracts; leaves lanceolate. This plant has much paler blossoms than the last, and has seldom more than two leaves. It flowers in March and April, and was recorded from the west of England a hundred and twenty years ago, but is not a native.

4. **Autumnal Squill** (*S. autumnális*).—Cluster somewhat corymbose, without bracts; leaves very slender, numerous. This species is less beautiful than the Vernal Squill. It flowers in August, and its leaves appear just as the blossoms are fully expanded. These are reddish-purple, with green lines down the back; and they grow on a stem three or four inches high. It is a somewhat rare plant on dry pastures at the south and west of this kingdom, though plentiful on grassy places and rocks in some parts of Cornwall, and also of the Isle of Wight. The species which furnishes the medicinal squills is *Scilla maritima*. This plant grows on the sandy shores of France and Southern Europe, and was a favourite remedy with ancient physicians.

10. Star of Bethlehem (*Ornithógalum*).

1. **Spiked Star of Bethlehem** (*O. pyrenáicum*).—Cluster very long; flower-stalks equal, spreading, afterwards erect; leaves all from the root,

1. BROAD LEAVED GARLIC OR RAMSONS.
Allium ursinum.

2. VERNAL SQUILL.
Scilla verna.

3. TWIN LEAVED S.
S. bifolia.

4. AUTUMNAL S.
S. autumnalis.

linear, channelled and pointed; bulb egg-shaped. The long raceme of yellowish-white flowers of this plant, which unfolds in June and July, may be found in some woods and pastures of England. Though rare, it is probably more truly wild than either of the other species. The Rev. C. A. Johns, who remarks that it is very abundant in the neighbourhood of Bath, says that the spikes of unexpanded flowers are often exposed there for sale as a pot-herb under the name of French Asparagus. It grows in several parts of Somersetshire, and also in Berks, Wilts, Sussex, and Bedfordshire. The stalk is one or two feet high, and the leaves usually wither very early.

2. **Common Star of Bethlehem** (*O. umbellátum*).—Flowers forming a corymb, the lower partial stalks very long; leaves all from the root, linear, channelled, smooth. The large star-like blossoms of this species expand in May and June, their snow-white sepals having each a broad, central line of green on the outside, and each flower having a membranous bract. The plant is not a native of England, though occurring in meadows and woods in various places, often near houses. The stem is from eight inches to a foot high, and the leaves are bright green and smooth. The species is common in the pastures of France, Switzerland, Germany, and Southern Europe. It continues to flower during two or three weeks, but never unfolds except in bright sunshine, and even then not before eleven; hence gardeners often call it Eleven-o'clock-Lady, and the French term it *Belle-d'onze-heures*, as well as *Ornithogale*. The Germans call it *Vogel-milch*, and the scientific name of the genus is from the Greek words for bird and milk.

The bulbous roots of this plant were said by Dioscorides to be commonly roasted or eaten, uncooked, with bread; and the roots both of this and other species have been known for centuries past as forming part of the vegetable food of Italy and the countries of the Levant, and as affording also in Sweden a resource in times of scarcity. Our species has acquired some interest from having been thought by Linnæus, and also by various commentators on Scripture, to be the "doves' dung," mentioned as the food of the famished inhabitants of Samaria, during the siege recorded in the Book of Kings. It is remarkable that in an abridged Chronicle of the History of England, it is stated that during the famine which devastated England in 1316, the poor ate "pigeons' dung." Dr. Royle, in a learned dissertation on this subject, observes that Bochart has shown that the term "pigeons' dung" was applied by the Arabs to different vegetable substances, and mentions a light substance like moss, and a fleshy-leaved plant like a salsola or fig marigold, as another. Dr. Royle considers, however, that pulse was most probably the substance intended by the Scripture writer; but as the *Ornithogalum* is abundant in the neighbourhood of Samaria, it is not very improbable that its bulbs may have been stored and used in time of need.

3. **Drooping Star of Bethlehem** (*O. nútans*).—Flowers in a loose one-sided raceme, drooping; filaments broad, 3-cleft, the alternate ones longer and with deeper lobes; bulb egg-shaped, two inches long. This plant is a doubtful native, growing rarely in fields and orchards in England. It is distinguished by its loose cluster of nodding flowers, which are larger than the common kind, though, like them, white within and externally green. The

stem is from nine inches to a foot high, and the flowers expand in April and May.

11. Gagea (*Gágea*).

Yellow Gagea (*G. lútea*).—Flowers in an unbranched umbel; stem angular; root-leaves narrow, lanceolate, ribbed, keeled, erect, taller than the stem; bulb with leathery coats. This rare wild flower occurs in pastures and bushy places in several parts of England and the Lowlands of Scotland, chiefly on the eastern half of the island. Its stem is about half a foot high. The blossoms, which expand from March till May, but only remain open till noon, are yellow within, tipped with green, and green externally. The plant was formerly included in the genus *Ornithogalum*, and is chiefly distinguished from it by its yellow flower. It is still mentioned as yellow Star of Bethlehem.

12. Lloydia (*Llóydia*).

Mountain Lloydia (*L. serótina*).—Leaves semi-cylindrical, those on the stem widened at the base; flower solitary; bulb minute, with many loose, scaly sheaths. This plant, which was formerly called Mountain Spiderwort, is very rare, growing on some of the most elevated mountains in Wales. Its stem is five or six inches high, with several small leaves; and its flowers, which expand in June, are erect, white, externally veined with green, and internally with reddish lines.

13. Tulip (*Túlipa*).

Wild Tulip (*T. sylvéstris*).—Flower solitary, rather drooping; stamens hairy at the base; leaves linear-lanceolate, smooth; bulb egg-shaped, covered with brown scales. This plant has but few British localities. It has been found in chalk-pits in Norfolk, Suffolk, Yorkshire, and Somerset. In these localities it is really wild, but in others it is only naturalized. Its flower is sufficiently like those of our gay Garden Tulips to enable anyone to identify it as of the same genus; but the plant has a much smaller blossom than the cultivated species, and its colour within is bright yellow, and externally yellowish-green. It is drooping and fragrant, and both anthers and pollen are yellow. It has very narrow leaves, and a bulb which increases by sending out a runner, at the end of which a new bulb is formed. This Tulip grows wild in the southern parts of France; and Linnæus enumerates it among the flowers of Sweden. Though no flower affords a greater number of varieties than the Tulip, yet there are not more than two or three original species. Wild Tulips ornament the fields of Southern Europe, and are plentiful in fields about Constantinople, as well as in those of Palestine. The beautiful varieties in our gardens have been chiefly propagated from the kind named after Conrad Gesner (*Tulipa gesneriana*). This naturalist first made the plant known by a botanical description and figure, he having, in 1559, seen the flower in a garden at Augsburg. The first Tulips planted in England were sent hither from Vienna about the end of the sixteenth century; and by the middle of the seventeenth, the gambling practices connected with Tulipomania, which prevailed especially in the Netherlands, had filled all Europe with astonishment.

1. SPIKED STAR OF BETHLEHEM.
Ornithogalum pyrenaicum.

2. COMMON S. O. B.
O. umbellatum.

3. DROOPING S. O. B.
O. nutans.

4. YELLOW GAGEA.
Gagea lutea.

Pl. 231.

14. FRITILLARY (*Fritillária*).

Common Fritillary, or Snake's-head (*F. meleágris*).—Leaves narrow, pointed, and all alternate; stem single-flowered; flower drooping, the points of the perianth turning inwards; bulb small, of several swollen scales. It is not often that we find the large flower of the Fritillary nodding over the grass of our meadows, though on moist pastures of the east and south of England it is less infrequent than elsewhere. The author has found it, on more than one occasion, on grassy places near Higham, in Kent; and many years since it grew so abundantly in a meadow between Mortlake and Kew, that the spot long bore the name of Snake's-head Meadow. It was not until after the middle of the last century known to be a native flower, but it was described a century earlier as a garden plant. It was called by the writers of that period *Lilium variegatum*, and Chequered Daffodil; and it had also the name of *Narcissus caparonius*, from Noel Capperon, an apothecary of Orleans, who was one of the victims of the massacre of St. Bartholomew. This botanist, who collected a large number of curious plants, is said by Beckmann to have given this flower the name of *Fritillaria*, from the regular square reddish or reddish-brown marks which chequer the blossom, and which remind one of a chess-board. Dodonæus gave it the specific name because the same marks suggested those on the feathers of the guinea-fowl, *Numidia meleagris*. Gerarde calls it Turkey Hen, or Ginny-flower; and remarks that many plants were sent him from Paris "by the curious and painful herbalist, John Robin." He adds, that they were greatly esteemed "for the beautifying of our gardens and the bosoms of the beautiful."

The flower of the Fritillary droops from the summit of a stem about a foot high. Its colours are pale and dark brownish-purple, and it expands in April. It is sometimes found of a pure white or greenish-white colour.

Of the typical genus *Lilium*, from which the order gets its name, we have no native representatives; but *Lilium martagon* has been long naturalized in one spot at Mickleham, Surrey.

Order LXXXIX. MELANTHACEÆ—MEADOW SAFFRON TRIBE.

Perianth 6-parted or united below into a tube; stamens 6; anthers turned outwards; ovary 3-celled; style deeply 3-cleft; capsule divisible into 3 valves; seeds each contained in a membranous case; leaves sheathing at the base with parallel nerves. This small order of plants contains species which have very powerful medicinal properties. Some are acrid, narcotic, and even poisonous.

1. MEADOW SAFFRON (*Cólchicum*).—Perianth of 6 divisions, with a very long tube rising from a sheath; capsules 3-celled; seeds round, numerous. Name from Colchis, a country famous for its medicinal plants.

2. SCOTTISH ASPHODEL (*Tofiéldia*).—Perianth of 6 divisions, with a small 3-lobed sheath. Name in honour of Mr. Tofield, an English botanist.

1. Meadow Saffron (*Colchicum*).

Common Meadow Saffron (*C. autumnale*).—Leaves flat, erect, broadly lanceolate; corm large, solid. This is not a common flower, though in some moist meadows, in various parts of England, its leafless large purple blossoms are very conspicuous during August and September. Blooming at a late season, when rain and frost prevail rather than sunshine, the ripening of its seeds is effected by a remarkable process. The flowers, which arise from the corm on long slender tubes, wither away, without leaving any indications of the seeds which are to reproduce them; but the ovary lies concealed within the buried base of the flower tube, and remaining there through the winter, comes up on a fruit-stalk in the spring-time, to ripen above the surface of the soil, while at the same period the green leaves of the plant spring up around it. Bishop Mant thus refers to this wonderful provision:—

"Or go to Monmouth's level meads,
Where Wye the gentle Monnow weds;
Long brilliant tubes of purple hue
The ground in countless myriads strew.
Anon, but brief the space between,
No more these countless tubes are seen;
The meads their verdant cloak resume,
And with that evanescent bloom,
You deem, perhaps, its spirit fled,
Abortive, virtueless, and dead.
You deem amiss. Within the breast
Secure of parent earth, the chest
That holds the embryo fruit is laid;
Thither by their long tube convey'd,
Safe from the force of winter skies,
Conceal'd the buried virtue lies,
Till spring-time from the fostering earth
Shall wake the meditated birth,
The germen on its stalk display'd,
And with embracing leaves array'd,
And when the vernal grasses' bloom
Shall spread the hay-field's rich perfume,
Bright June mature in timely hour
The seeds of August's early flower."

The Meadow Saffron is believed to have taken its botanic name from Colchis, a country on the eastern shore of the Euxine, or Black Sea, where it is said to have grown in abundance among many plants of such powerful properties as to have led to an allusion of Horace:—

"Or tempered every baleful juice
Which poisonous Colchian glebes produce."

A local name for the flowers, suggested by the absence of leaves, is Naked Ladies.

The French call the plant *Mort au chien*, and *Tue chien*, as well as *Colchique d'automne*. Although our domestic cattle will not eat it under ordinary circumstances, and the tall flower often stands up late in the year among the grass which has been cropped all around it, yet, when turned early into the spring meadow, they sometimes crop it, when pain and often a great mortality ensue. Mr. Purton remarks that farmers should be cautious of turning hungry cattle into pastures where it abounds, as it proved fatal to a number of calves which were at this season brought into lands where its leaves formed a large part of the herbage. It is probable that when dried it loses its acrimony; for the plant is abundant in the meadows of the Italian Alps, where it must form a portion of the hay.

The Colchicum was formerly regarded as a most effectual cure for various complaints; and an infusion of its bulbs in vinegar, and made, with the addition of sugar, into a syrup, has been recommended in pulmonary affections. A similar oxymel is still prepared, and is said to be a useful

pectoral; it should, however, be employed with caution. The famous *Eau médicinale*, so praised for its cure of gout, is composed mainly of a tincture of this plant; and in Switzerland, where the ancient repute of its medicinal virtues remains in full power, the peasantry tie the flowers around the necks of sickly children as a restorative. This may be a safe proceeding; but Dr. Hamilton, in his "Flora Homœopathica," says, "Garibel, in his 'Histoire des Plantes des Environs d'Aix,' records that a servant was killed by taking the flowers for an intermittent fever, for which malady they were said to be a remedy."

Dr. Storck, of Vienna, some years since, called the attention of European practitioners to the value of this plant in cases of rheumatic gout; and it is still used both in the ordinary medicines for this complaint, and in the globules of the homœopathist. Of its dangerous nature, however, in the hands of the unskilful, we have not wanted proof; in the course of the year 1855, two men died in this kingdom in consequence of its use. It appeared, on examination, that they were two robust labouring men, who, being troubled with occasional pain, had applied to an empiric for relief, and who both sank on the following day from prostration. An irritant poison was found to have caused death; and a chemical analysis proved that colchicum had been administered in a powerful form.

The corm of the Meadow Saffron is gathered for use when about the size of a chestnut; and its power is supposed to be greatest when it is about a year old. It is a solid bulb, without scales, and fleshy and white in the interior, with a milky juice, which has a very acrid and bitter taste.

2. SCOTTISH ASPHODEL (*Tofieldia*).

Mountain Scottish Asphodel (*T. palústris*).—Flowers in a dense crowded head, with a bract at the base of the partial flower-stalk; stem nearly leafless; leaves sword-shaped, in 2-rowed tufts; rootstock creeping. This plant is not infrequent in boggy places on the mountains of Scotland, the north of England, and Ireland. Its stem is four or five inches high; and its short dense spikes of greenish-white flowers appear in August. The narrow sword-shaped leaves all spring from the root.

Order XC. ERIOCAULONEÆ—PIPEWORT TRIBE.

Flowers in heads; perianth chaffy or white, or colourless, 2—6 parted; stamens 2—6, if in two rows, the inner row most developed; ovary free, with 1 or more cells; ovules solitary, pendulous; fruit, a capsule. The order consists of herbaceous plants or under-shrubs, generally having the stamens and pistils in different flowers on the same plant.

PIPEWORT (*Eriocaulon*).—Flowers arranged in a compact scaly head; barren flowers in the middle; perianth divided into 4 or 6 segments; stamens 4—6; anthers roundish, 2-celled; fertile flowers in the circumference; perianth deeply 4-parted; style very short; stigmas 2—3; capsule 2—3, lobed, with as many cells and valves; seeds round, solitary. Name from the Greek *erion*, wool, and *kaulos*, a stem.

PIPEWORT (*Eriocaúlon*).

Jointed Pipewort (*E. septanguláre*).—Stem with several angles, much longer than the flattened pointed leaves; outer scales without flowers; smooth inner scales, and flowers fringed at the extremity; perennial. This is a rare and very singular aquatic, found in several lakes in the islands of the Hebrides, and frequent at Connemara in Ireland. The slender stalk is sometimes half a foot high, at others twice that height, varying according to the depth of the water in which it grows; and it bears, in September, a solitary globular white head of little flowers. The leaves form a tuft around its base, and are two or three inches long and awl-shaped, while the roots consist of numerous long white jointed fibres. The French call the Pipewort *La Joncinelle.*

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